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The Educational Level as Index of Economic and Social Development: the Case of the Cyclades

Abstract:
Taking into account the relevant studies, the census returns and official statistics, this paper explores the relationship between socio-economic development and education in the Cyclades. These islands, seen as a geographical entity, have experienced a remarkable population and economic development during the last forty years grace to a booming tourist industry. Nevertheless, the human geography of these islands is quite heterogeneous. Islands that have witnessed intense tourist development have a younger age structure, because of the relatively young people who settled there in search for a job. At the same time there are islands where more than 30% of their population consists of elderly people (65 and over years of age). The average Cycladian has a higher income than the average Greek. Nevertheless, economic prosperity does not seem to be related with a high educational level, since the population of the Cyclades has, on average, lower educational level than the population of Greece. It is plausible that in areas that are developed grace to tourism, skills and aptitudes that are acquired through vocational training are more important to the average inhabitant than university level education.

Key-Words: Education Level, Economic and Social Development, Index, Cyclades

JEL category: P

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1. **Introduction**

The group of islands called "the Cyclades" is situated in the middle of the Aegean sea, in a latitude between 36°N and 38°N and a longitude between 24°E and 26°E. These islands belong to the Greek state since its independence in 1830. Since the mid-1970s they experience a spectacular economic growth grace to the booming tourist industry. Economic growth was followed by demographic and social changes in the islands. This paper investigates the relationship between educational level and economic and social development in the Cyclades. Educational systems are expensive both for the state and for the individuals that decide to follow higher education. Therefore, the study of any relationship between educational level and socio-economic development of an area will help us to understand the priorities of the local population as far as its educational goals are concerned.

2. The human geography of the Cyclades

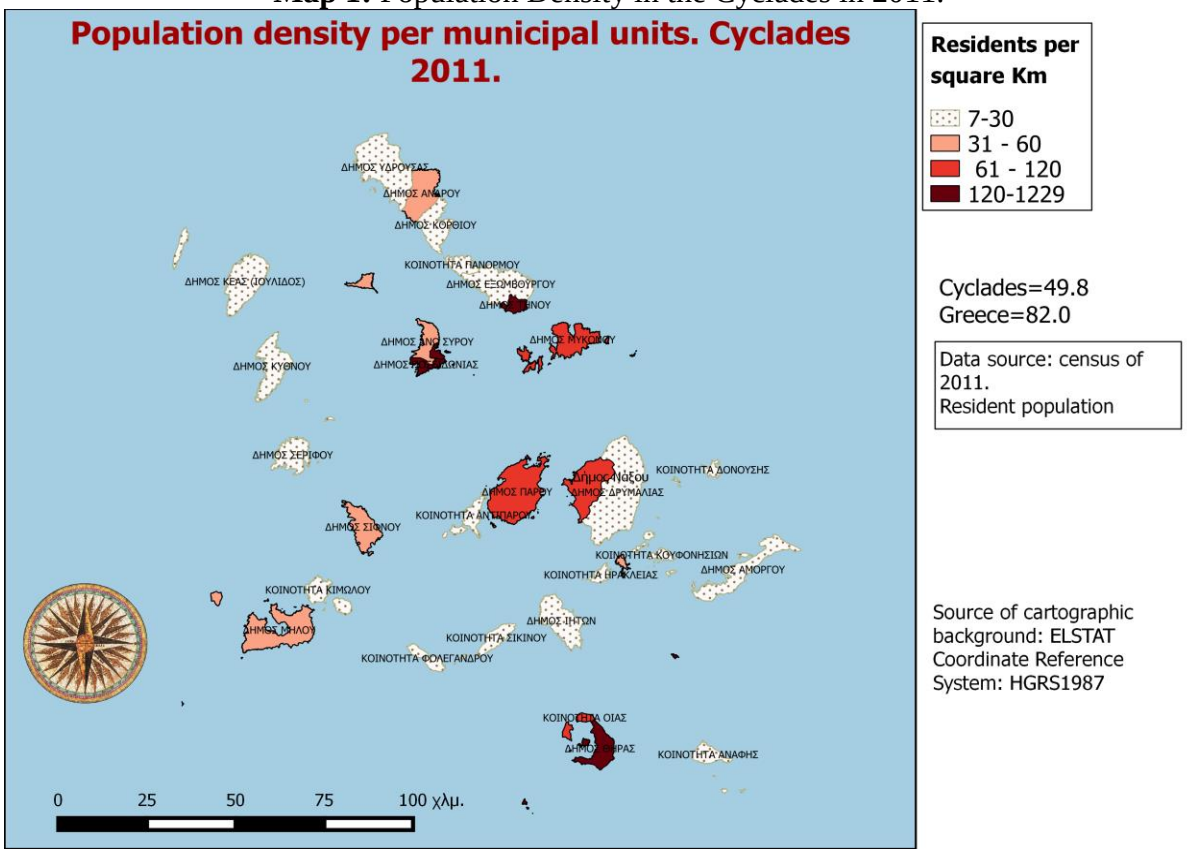
Human geography, although it is not a direct consequence of economic and social development, it is affected by it and it affects it as well. Therefore, it is useful to see some demographic features of the population of the study islands, so as to better understand any relationships between socio-economic development and human geography.

2.1 Population density

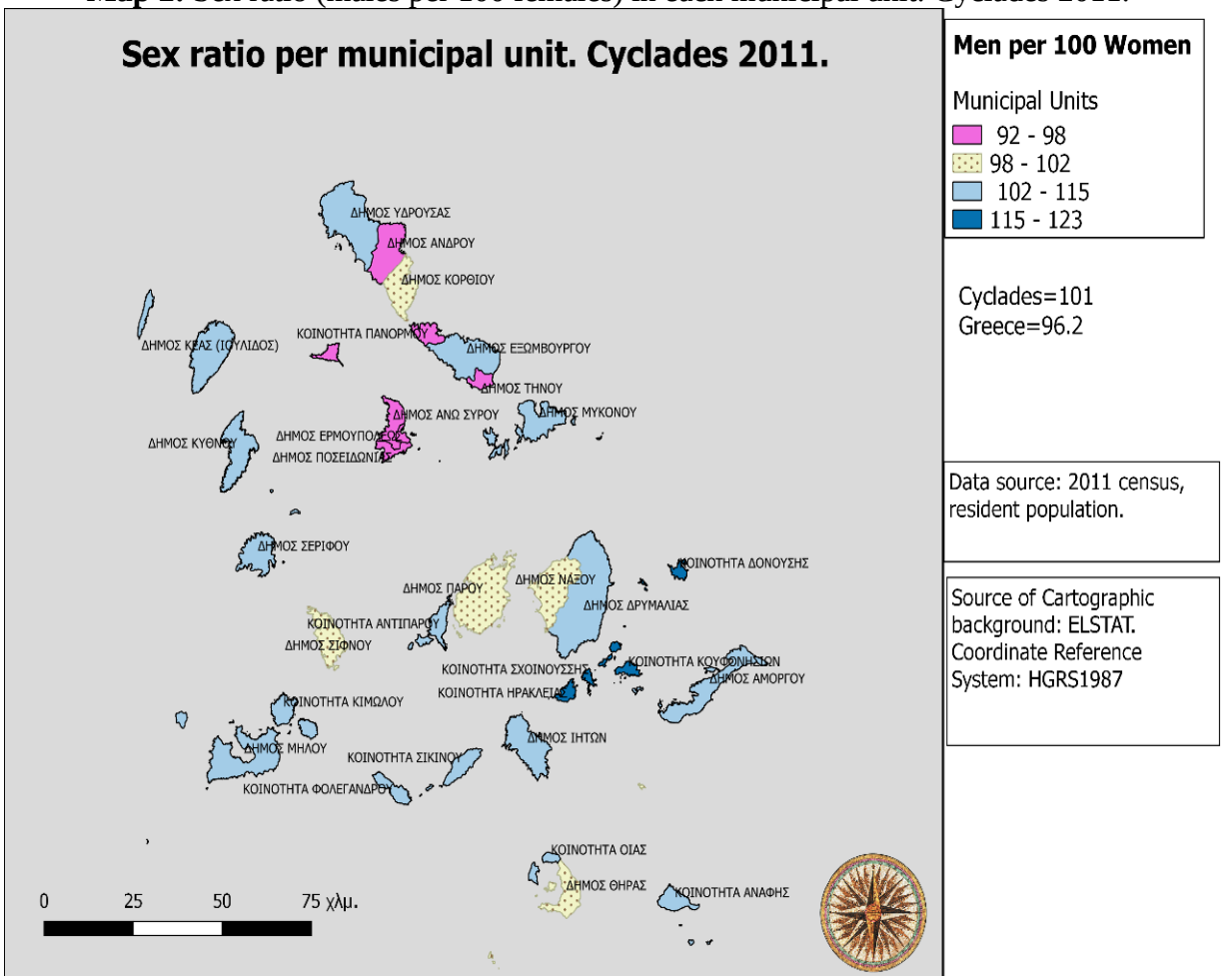
The Cyclades in general are less densely populated than Greece as a whole. In 2011 there were approximately 50 people per Km^2 in the Cyclades, while in Greece there were 82. However, map 1 reveals a great heterogeneity in population density from one island to another and also within the same islands, from one municipal unit to another. The case of Tinos is characteristic: most part of the island is very sparsely populated with less than 18 inhabitants per Km^2 (municipal unities of Exomvorgou and Panormou), while in Tinos (municipal unity which includes the main town of the island) there are 637 inhabitants per Km^2. In the upper end of the scale is Hermoupolis of Syros, with 1229 inhabitants per Km^2, which is by far the most densely populated municipal unit in the Cyclades.

In the lower end of the scale, there are islands with less than 30 inhabitants per Km^2, like Kea, Kythnos, Serifos, Kimolos, Sikinos, Folegandros, Amorgos, Anafi, and the small Cyclades (Schinousa being an exception). On the other hand, Santorini, Syros, Mykonos, and Paros could be characterized as densely population islands (by the Cycladian standard), as they have more than 60 inhabitants per Km^2. Between these two categories, the rest of the islands are sorted (Milos, Sikinos, Naxos, Andros, Tinos, Schinousa) with between 31 and 60 inhabitants per Km^2.

Map 1: Population Density in the Cyclades in 2011.



Map 2: Sex ratio (males per 100 females) in each municipal unit. Cyclades 2011.



2.2 The sex ratio in the population

In Greece in 2011 women outnumbered men (there were 96 men per 100 women). Unlike Greece as a whole, in the Cyclades the number of men exceeded slightly that of women in a ratio 101 men per 100 women (ELSTAT 2014). This masculine sex ratio may be due to the immigration that took place in the Cyclades in the 1990s mainly from ethnic Albanians. The sex ratio of the Albanians who came in Greece during the 1990s was pretty masculine, namely 142 men per 100 women (Gavalas 2015:35)

However, map 2 shows that men are not the majority of the population in every island. In Syros there were more women, especially in the municipal unit of Hermoupolis (91,8 women per 100). In the municipal unit of Panormos in Tinos and in the municipal unit of Andros women were the majority as well. In the islands of Paros, Sikinos, Naxos Santorini and in the municipal unit of Korthi (Andros) the sex ratio was balanced (approximately 1 to 1). In every other municipal unit men constituted the majority of the population.

2.3 Demographic ageing

The population of the Cyclades is slightly younger than that of Greece. In 2011 the percentage of the elderly in the Cyclades (aged 65+) was 18.9%, while that of Greece exceeded 19%. Focusing on the Cyclades, one finds great fluctuations from one island to another and from one municipal unit to another as a far as demographic ageing is concerned (map 3). Islands that can be characterised as tourist-oriented, present lower percentages of elderly: in Mykonos, Santorini and Ios the elderly constituted less than 16% of the population in 2011. Antiparos, Paros, Kea and Syros were following with that order with the aged population being between 16% and 21% of the total. The island with the most aged population in the Cyclades was Kimolos where the elderly constituted 41% of the population. Particularly high percentages of aged population are also noticed in two municipal unities of Tinos (exomvourgou and panormou with almost 1/3 of their population being elderly) and Sikinos (28%). In general, one can observe a negative relationship between demographic ageing and tourist development/urbanization.

Map 3: Elderly (65+) as percentage of the total population.. Cyclades 2011.

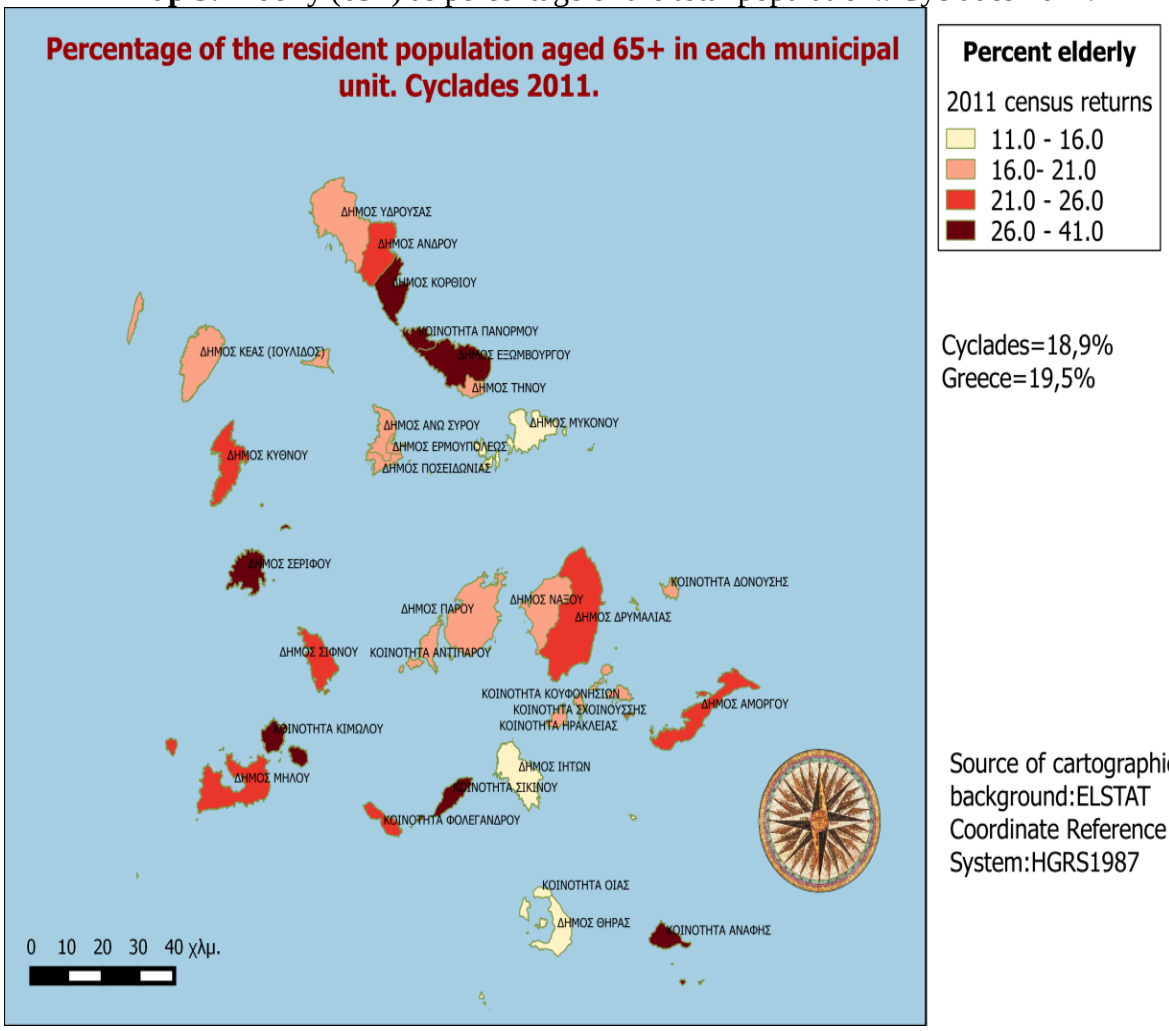
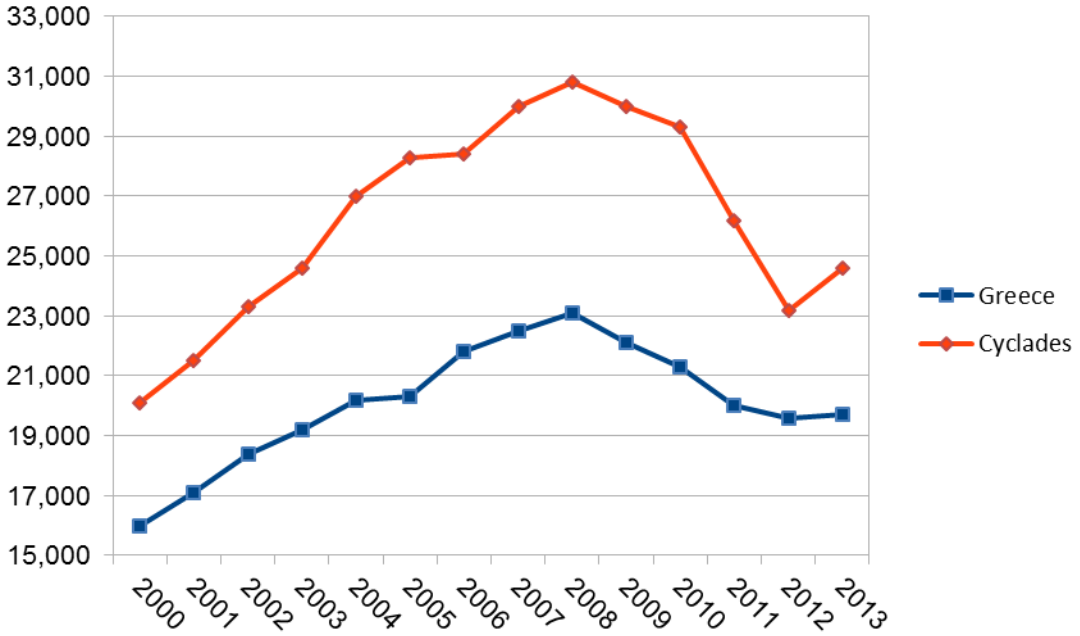


Figure 1: Purchasing Power Standard (in Euros) per inhabitant. Greece and Cyclades 2000-2013.



Source: Data from http://appsso.eurostat.ec.europa.eu/nui/show.do

4. Indexes of economic and social development

There are several ways to measure economic development of an area. One of the most common and widely used index is the annual per capita income of the population expressed as purchasing power in a certain currency. Figure 1 shows that the average inhabitant of the Cyclades was more than 20% richer than the average Greek in the period from 2000 to 2013. In certain years, like in 2005, the difference reaches 40%. It is not difficult to establish that this economic prosperity of the Cyclades is due to tourist development. According to the 2011 census-returns 23.9% of the working population of the South Aegean (the Region which the Cyclades belong to) is engaged in providing accommodation and food services, while the relevant percentage in Greece is only 7.8% (ELSTAT 2014).

The importance of tourism to the economic development of the Cyclades is established by the data in table 1 as well. The service sector had a greater contribution in the Cyclades (compared to Greece) at least since 1995, while economic activities involving hotels and restaurants were responsible for more than 20% of GDP in the Cyclades in 2005 versus only 7% in Greece.

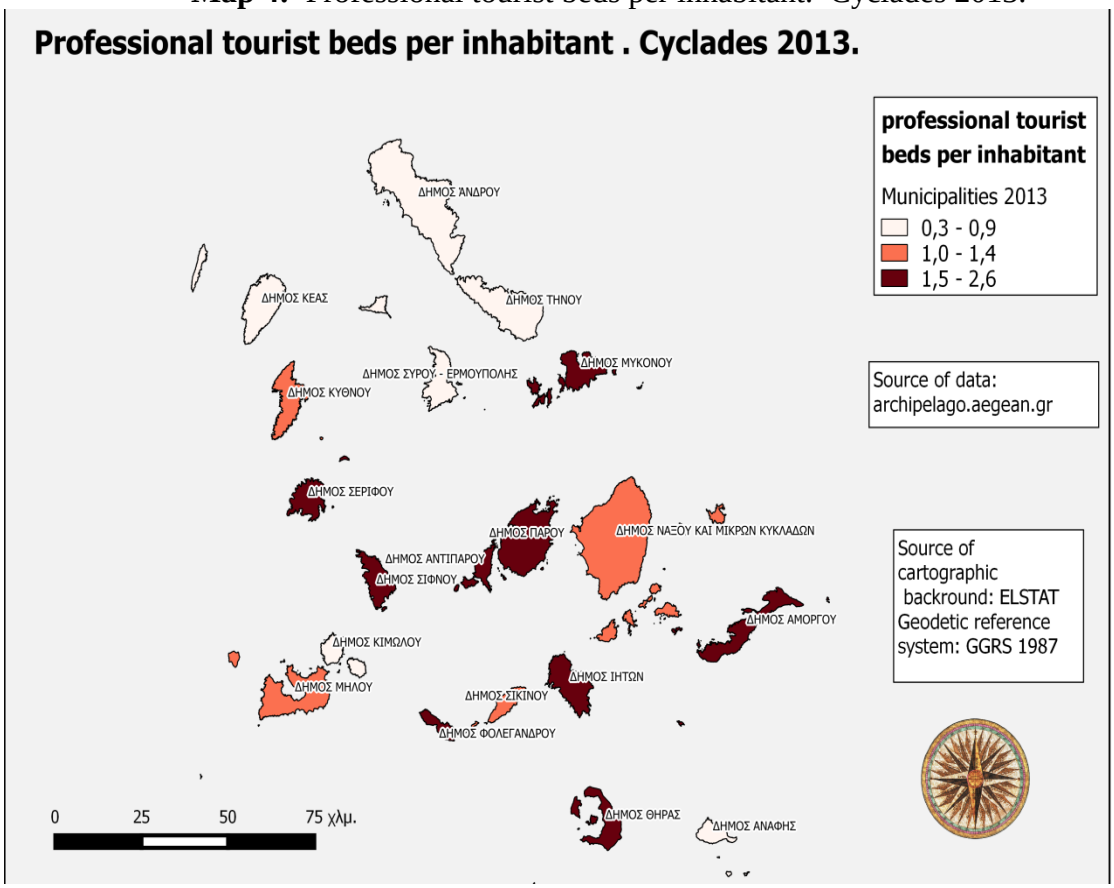
Table 1: Contribution of certain sectors of economy to the Gross Domestic Product (GDP). Greece and the Cyclades 1995-2005.

	Agriculture as % of GDP		Industry and constructions as % of GDP		Services as % of GDP		Hotels and restaurants as % of GDP	
Year	Greece	Cyclades	Greece	Cyclades	Greece	Cyclades	Greece	Cyclades
1995	9.9	10.7	22.4	15.2	67.7	74.1	6.5	8.9
1996	9.1	11.9	22.3	14.4	68.6	73.8	7.0	9.1
1997	8.5	11.6	21.0	11.7	70.5	76.6	7.8	10.8
1998	8.2	10.9	21.6	11.6	70.2	77.4	7.7	10.8
1999	7.9	11.8	21.5	11.6	70.5	76.6	7.1	9.2
2000	6.6	4.2	21.0	14.0	72.5	81.8	7.5	27.0
2001	6.4	4.4	21.4	19.4	72.2	76.3	7.4	26.0
2002	5.9	4.0	19.5	18.2	74.6	77.8	7.2	23.4
2003	5.5	3.7	19.0	19.6	75.5	76.8	6.6	21.7
2004	4.9	3.4	18.7	18.3	76.4	78.3	6.5	16.7
2005	4.8	3.5	19.2	15.5	76.0	81.0	7.0	21.2

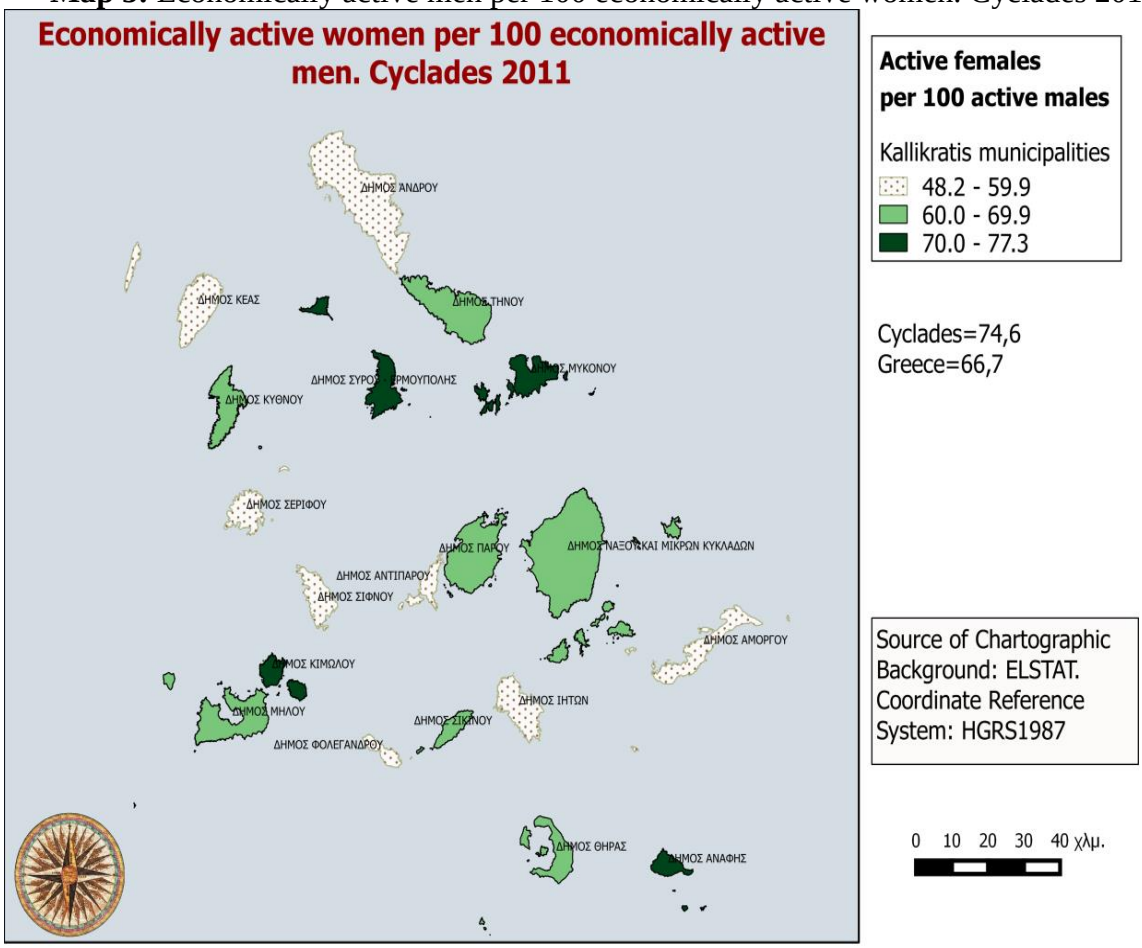
Source: http://www.economics.gr/AllMedia/_gr/

An obvious index of tourist development is the number of professional tourist beds per inhabitant. Professional tourist beds are considered to be beds in hotels, rooms to let, and camping. Beds in empty houses that are built as holiday houses for their owners and do not bear any profit to them are not included in the professional tourist beds. In general, the Cyclades are the most tourist-oriented islands of Greece.

Map 4: Professional tourist beds per inhabitant. Cyclades 2013.



Map 5: Economically active men per 100 economically active women. Cyclades 2011.



It is indicative that in 2013 there were 1.24 professional tourist beds per inhabitant in the Cyclades, while in the same year in Rhodes there were 0.85, in Corfu 0.62 and in Crete 0.35 professional tourist beds per inhabitant. Only in the island of Kos this ratio was higher than in the Cyclades (1.55 per inhabitant). However, tourist development is not homogeneous among the Cycladian islands. Map 4 shows the variation in the tourist development of the islands.

The most tourist-oriented islands, according to map 4, are Ios, Santorini, Folegandros, Mykonos, Antiparos, Sifnos, Amorgos, Serifos and Paros, in this order if we consider as geographical unit of analysis the Municipalities (Kallikratikoi Dimoi). In each of the above-mentioned islands there were at least 1.5 professional tourist beds per inhabitant. However, in the municipality of Naxos and Small Cyclades there were islets where the ratio of professional tourist beds per inhabitant was excessively high: Ano Koufonisi and Heraklia with 3.6 and 2.3 professional tourist beds per inhabitant exceeded by far 0.87 which was the ratio for the island of Naxos, and thus the municipality of Naxos and Small Cyclades as an entity presented a ratio of 1.1 professional tourist beds per inhabitant. Whether this kind of tourist development is related with the occupational status of the population is examined in table 2. In any case tourist development, even with only criterion the ratio of professional tourist beds per inhabitant, constitutes a substantial economic and developmental feature of the Cyclades.

4.1 Occupational Status

More than 4 out of 10 inhabitants of the Cyclades (41.4%) were economically active in 2011, that is they were either working or seeking for a job (table 2). In the same year the economically active population of Greece as a whole was 42.4% of the total population. The percentage of economically active is an index of the participation of the population in the labour force, i.e. in the official labour market. It is also an index of the dynamism of the population as higher percentages of economic activity mean that a greater part of the population is working in a paid job or is willing to do so. In the Cyclades, although the participation of the population in the labour market is at the same level as in Greece, there are great variations from one island to another. The islands with the highest participation of the population in the labour force are Mykonos (54.8%), Santorini (49.3%), Ios (48.7%) and Paros (44.3%). These four islands are among the most tourist oriented in the Cyclades and they have a relatively young population (table 2 and map 3). On the other hand, the lowest percentage of economically active population is observed in Kimolos (24.1%), followed by

Sikinos (37%) and Sifnos (37.4%). In all likelihood the very low participation of the inhabitants of Kimolos in the labour force is due to its aged population: 41% of the inhabitants of Kimolos are elderly (65+ years old), thus making Kimolos the most aged island of the Cyclades. With few exceptions, the elderly neither work nor seek for a job, thus reducing the percentage of economically active in the population.

It is also useful to examine the sex-specific differences in the percentages of economically active. Women participate in the labour force in a smaller degree than men do in every Cycladic island and in Greece as well (map 5). However, women's participation in the labour force was greater in the Cyclades than in Greece as a whole. In the Cyclades there were 74.6 economically active women per 100 economically active men, while in Greece this ratio was 66.7, according to the 2011 census. The islands with the smallest differences in the participation of men and women in the labour force were Kimolos, Anafi, Mykonos and Syros, where for every 100 economically active men there were 70-77 economically active women.

As far as unemployment is concerned, the Cyclades in 2011 had lower unemployment than the national average (13.8% in the Cyclades versus 18.7 in Greece as a whole). Furthermore, no Cycladic island had greater unemployment than the national average, despite the fact that variation of unemployment from one island to the other was not negligible (table 2), fluctuating from 8% in the case of Kythnos to 16.7% in the case of Syros.

5. Tourist development and occupational status.

Tourist development increases the percentages of economically active population, though it does not necessarily decrease unemployment. This is inferred by examining table 2 and the correlation coefficients (Pearson's r) between tourist development and the labour market indexes. Pearson's r between tourist development and economic activity is 0.61, meaning that as the number of professional tourist beds per inhabitant is increasing, the percentage of those who are either working or seeking for a job is also increasing. On the other hand, the relationship between tourist development and unemployment, despite the fact that is negative ($r=-0.21$), is not statistically significant (p-value=0.38) and therefore it cannot be inferred that tourist development reduces unemployment. Islands with low or medium tourist

development[2] (if we regard as an index of tourist development the ratio of tourist beds per inhabitant), like the islands of Kimolos and Kea, had had a relatively low unemployment rate in 2011.

Table 2: Labour market indicators and tourist development. Cyclades 2011-2013.

Municipality	% unemployed 2011	% economically active 2011	Professional tourist beds per inhabitant 2013
Kimolos	9.1	24.1	0.27
Syros-Hermoupolis	16.7	42.0	0.32
Andros	13.0	38.5	0.57
Anafi	10.8	41.0	0.74
Tinos	13.6	42.4	0.78
Kea	9.3	40.2	0.83
Naxos & Small Cyclades	15.6	41.3	0.87
Kythnos	8.0	41.1	1.13
Milos	8.9	39.5	1.15
Sikinos	14.9	37.0	1.33
Paros	11.6	44.3	1.50
Serifos	10.9	38.2	1.54
Amorgos	10.7	41.8	1.63
Sifnos	8.1	37.4	1.74
Antiparos	13.2	37.7	2.11
Mykonos	11.0	54.8	2.22
Folegandros	9.2	45.2	2.30
Thira	12.8	49.3	2.39
Ios	10.8	48.7	2.65
Cyclades	13.2	41.4	0.50
Greece	18.7	42.4	-

Source: elaboration of census returns and data taken from http://archipelago.aegean.gr .
Note: Pearson's r (% unemployed * tourist beds per inhabitant)= -0.213 p-value=0.381.
Pearson's r (% economically active * tourist beds per inhabitant)=0.615 p-value=0.005.

On the other hand, islands where the tourist beds were more than the permanent inhabitants like the islands of Paros, Antiparos, Santorini and Mykonos had had an unemployment rate greater than 10%. The highest unemployment rate was recorded in Syros and Naxos, island which, according to our criterion (professional tourist beds per inhabitant) are not tourist oriented, since the ratio of professional tourist beds per inhabitant is less than one. Nevertheless, unemployment rates in the Cyclades are highly seasonal, because of the seasonality of the tourist period. One should keep in mind that the population census of 2011 (from where the unemployment data have been taken) took place in May, in a month that

[2] Islands with low or medium tourist development are considered those that have less than one professional tourist bed per inhabitant.

tourist businesses are just waking from the hibernation of the winter months and are under-staffed. It is very likely that unemployment figures would have been lower, had the census taken place in August.

5.1 Educational level and tourist development.

Education is considered a valuable asset and one of the milestones of civilization and progress in societal as well as in personal level. In the framework of this article, however, the topic of our research is the contribution of education in local development. Educational systems are expensive both for the authorities and for the individuals who decide to attend the higher education. It is of utmost importance, therefore, to investigate the relationship between education and economic development in the Cyclades so as to understand the priorities of the local inhabitants as far as educational matters are concerned.

Table 3: Highest educational level attained by percentages of the population. Greece and the Cyclades 2011.

Educational level	**Greece**	**Cyclades**
University Graduates (plus post –graduates, PhD etc)	16.7%	11.5%
Vocational training after finishing high school	4.6%	4.4%
High school	23.4%	21.0%
Mandatory education and vocational training without having attended high school	13.2%	15.2%
Primary education	23.3%	27.0%
Other	18.8%	20.9%
Total	100.0%	100.0%

Source: elaboration of census returns.

In general, people in the Cyclades stop their formal education earlier than in Greece (table 3). There are proportionally more people who stopped their education in the primary school and in the Gymnasium (mandatory education since the age of 15) in the Cyclades than in Greece. On the other hand, there are proportionally less Cycladians who attended high school (lyceum in Greek) or vocational education after lyceum and even less who are university graduates (compared to Greece's population).

None of the correlations between educational level and tourist development is statistically significant. However, there seems to be a negative relation between tertiary education and tourist development (table 5).

Table 4: educational level and tourist development in the Cyclades 2011-2013.

Island	(1) % university graduates	(2) % vocational training	(3) % high school graduates	(4) % graduates from mandatory education and vocational training without high school	(5) professional tourist beds per inhabitant 2013
Antiparos	7.8	3.8	22.1	17.3	2.11
Ios	8.8	4.2	18.2	19.1	2.65
Anafi	8.9	4.1	16.6	15.4	0.74
Sikinos	8.9	4.1	16.6	15.4	1.33
Folegandros	8.9	4.1	16.6	15.4	2.30
Kythnos	9.1	3.4	15.5	17.7	1.13
Kimolos	9.5	5.3	18.3	14.7	0.27
Milos	9.5	5.3	18.3	14.7	1.15
Santorini	9.6	4.3	19.6	16.9	2.39
Kea	10.0	3.3	16.6	18.0	0.83
Sifnos	10.3	4.4	17.3	18.7	1.74
Donousa	11.2	3.8	16.6	14.2	0.66
Heraklia	11.2	3.8	16.6	15.4	2.26
Koufonisi	11.2	3.8	20.2	14.2	3.59
Naxos	11.2	3.8	21.0	13.0	0.87
Schinousa	11.2	3.8	16.6	18.0	1.40
Andros	11.3	3.9	18.6	15.3	0.57
Serifos	11.4	3.7	20.2	14.2	1.54
Tinos	11.4	5.1	19.7	13.8	0.78
Mykonos	11.9	5.4	26.3	16.4	2.22
Paros	12.0	4.4	23.2	15.9	1.50
Amorgos	13.1	4.0	16.6	15.4	1.63
Syros	14.4	4.5	22.4	14.1	0.32

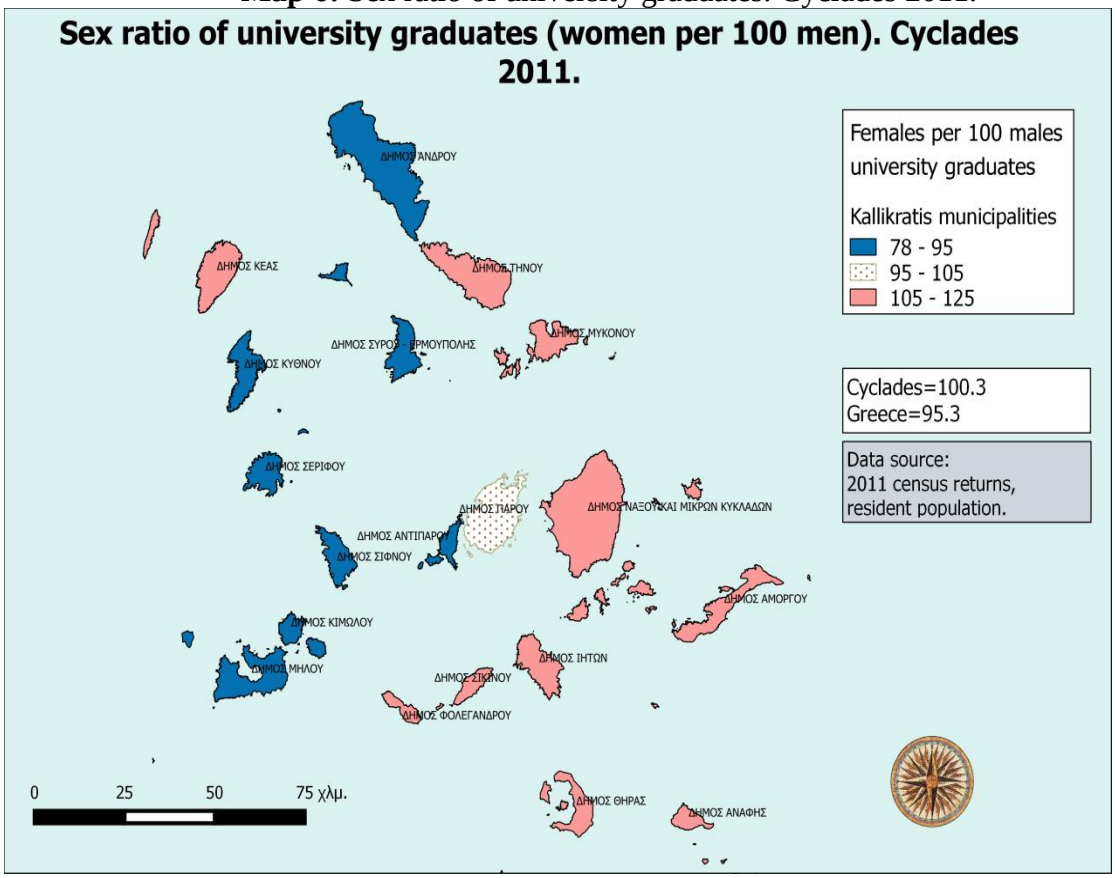
Source: For the educational level: elaboration of census returns (table B06 of the 2011 census). For the professional tourist beds per inhabitant <https://archipelago.aegean.gr>
Note: data have been sorted in ascending order by column 1 (% university graduates).

Table 5: Relationship between educational level and tourist development.

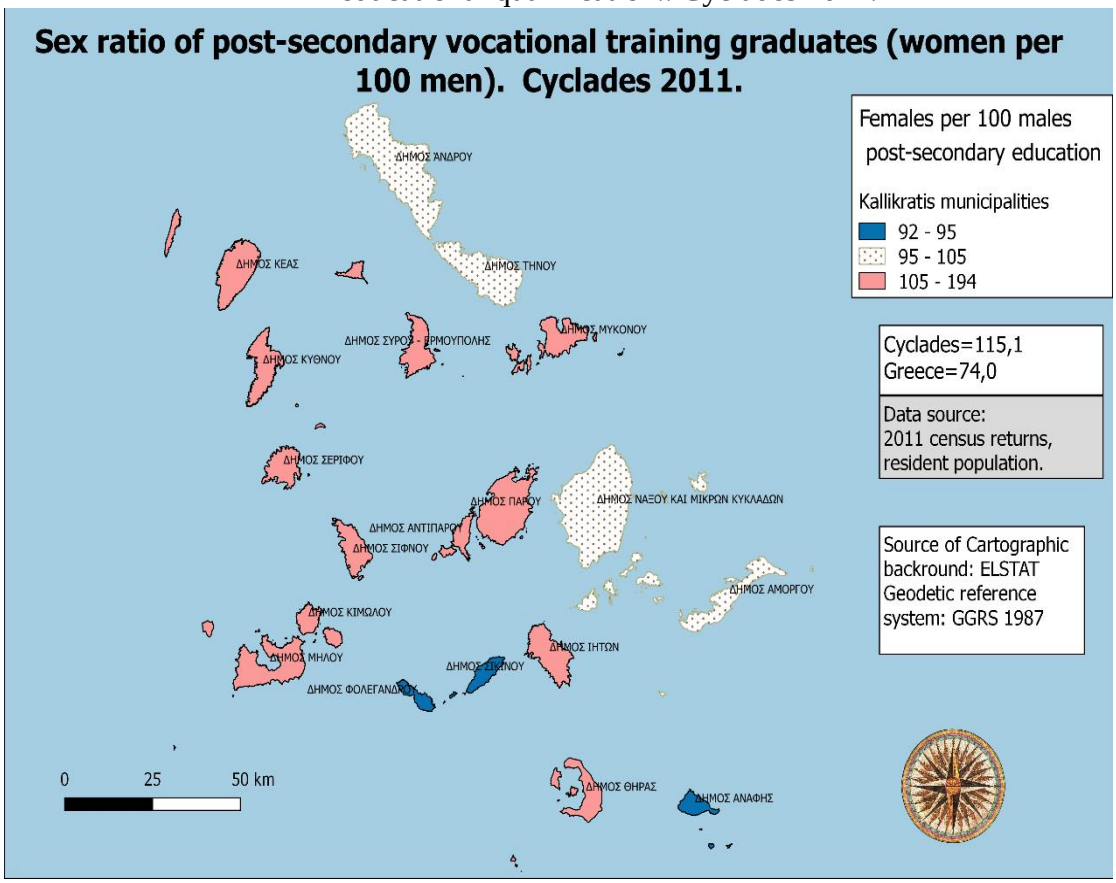
	(1)*(5)	(2)*(5)	(3)*(5)	(4)*(5)
Pearsons r:	-0.20	-0.13	0.16	0.30
P-value	0.374	0.541	0.393	0.408

Source: correlations are based on data in table 4.

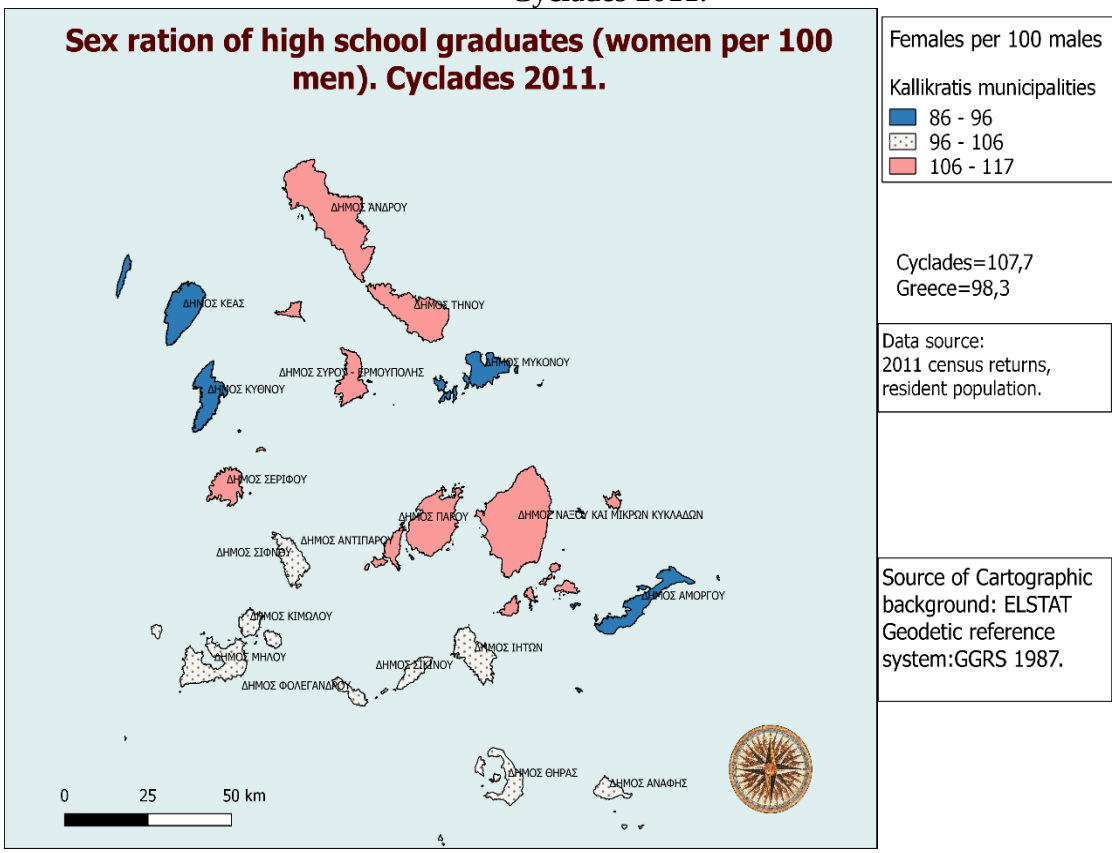
Map 6: Sex ratio of university graduates. Cyclades 2011.



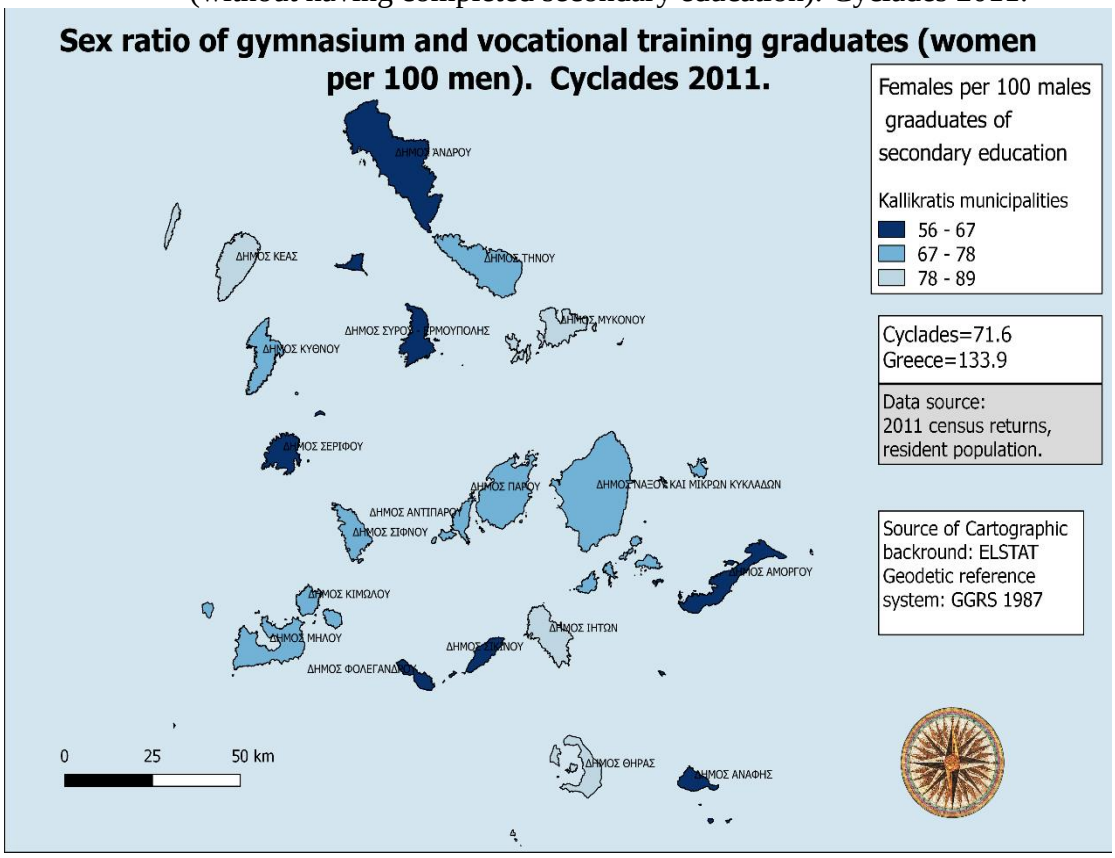
Map 7: Sex ratio of those having a post-secondary vocational training certificate as highest educational qualification.. Cyclades 2011.



Map 8: Sex ratio of those having a high school certificate as highest educational qualification. Cyclades 2011.



Map 9: Sex ratio of those who have attended compulsory education or vocational training (without having completed secondary education). Cyclades 2011.



The lowest percentages of university graduates are observed in the most tourist-oriented islands. It is plausible that young people in these islands prefer a career in the family business (either this business has to do with the provision of accommodation through hotel, rooms to let etc, or with recreation activities and food services) to a university level degree which will not give them any practical aptitudes that are necessary for their job.

An educational feature specific to the Cyclades is that women spend more years in education than men do. In the tertiary education (map 6) there are more graduate women than men in the Cyclades (100.3 women per 100 men). In Greece, on the other hand, there are far less women that have attended tertiary education than men (95.3 women per 100 men). This difference between the Cyclades and Greece may be explained by the fact that in families with children of both sexes, it is the boy that takes over the family business. In the Cyclades there are much more tourist businesses per inhabitant than in Greece as a whole. Many of these businesses do not require a university degree for their management and therefore the males who take over the businesses are not obliged to hold a university degree. Females, on the other hand, by not having a secure job, regard tertiary education as more important.

It is remarkable however, that women graduates of post-secondary vocational training outnumber men of the same educational level in the Cyclades (map 7). In 2011 in the Cyclades there were 115 women in this educational category per 100 men. On the other hand, in Greece there were only 74 women of post-secondary vocational training per 100 men.

The contrast between the Cyclades and Greece is also visible as far as high school (lyceum) graduates are concerned (map 8). In the Cyclades there are more women than men whose highest educational qualification is high school degree (108/100), while in Greece the opposite is true (98 women per 100 men in this category).

The peculiarity of the Cyclades as far as the sex-specific educational level is concerned, is verified in map 9. Many more men than women in these islands stop their formal education at the age of 15 (which is the age of mandatory education in Greece) and may or may not attend a vocational training (without having finished high school). More specifically there were 71.6 women per 100 men in this category in the Cyclades in 2011, while in Greece this ratio was 134/100. It is worth noting that in Greece and in the Cyclades as well there are schools that offer vocational training without requiring a high school degree.

6. Conclusions

The Cyclades have experienced a spectacular economic and demographic development since the 1970s grace to a booming tourist industry. As a consequence they have higher GDP per

capita than the national average and are among the wealthiest Districts of Greece. The archipelago of the Cyclades is rather sparsely populated, since population density is 50 residents per km^2. The sex ratio is well-balanced and the population in these islands, though aged (the elderly constitute 19% of the population) is younger than that of Greece (there are 123 people aged 65+ per 100 children 0-14 years old, while in Greece this index of ageing is 134/100). However, the Cyclades cannot be examined as an entity because of the great differences in these indexes from one island to another. There are islands, like Kimolos, that the elderly make up 41% of the population and islands, like Mykonos and Santorini, where the elderly make up only 11% of the population.

Taking as a criterion of tourist development the professional tourist beds per inhabitant, one realizes that the Cyclades with 1.24 such beds per inhabitant are more tourist oriented than Crete (where this index is 0.35), Corfu (0.62) and Rhodes (0.85).

Nevertheless, despite the remarkable progress in the economic sector, the educational level of the population of the Cyclades is lower than the national average. University graduates are proportionally fewer than in Greece as a whole (11.5% versus 16.7%). The same is true for high school graduates and those with a post-secondary education degree as the highest educational qualification. On the other hand, there are proportionally more people in the Cyclades (compared to Greece) who stopped their formal education at 15 years of age and may or may not have attained a vocational training afterwards. Another feature of the education of the Cycladians is that there are fewer men than women with an educational qualification other than the mandatory degree of gymnasium (which is obtained in most cases at the age of 15). In the rest of Greece the opposite is true, that is men attend more years of education than women do. The findings of this paper imply that in the case of the Cyclades the educational level do not relate to economic development. At least as far as the economic development that stems out of tourism is concerned, vocational training, which is attained immediately after mandatory education, is more important to the local population than a university degree, which degree may be irrelevant with the aptitudes required by tourist-oriented employment.

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Educational Research as a Tool for Teacher Lifelong Learning

Abstract:
Lifelong learning is at the centre of interest in the field of education, and it is, therefore, a focal point for teachers since it is a fundamental element of their professional life. The promotion and support of life-long learning could be achieved if teachers carried out the planning and implementation of educational research throughout their career. If teachers can embrace the process of lifelong learning along the above lines this would give them the opportunity to: a) update their knowledge, b) evaluate their cognitive skills, c) strengthen their autonomy and self-determination as adult professionals. In this sense then, we would argue that Educational Research could become the target and vision for teacher lifelong learning.

Key-words: Research, Learning, Teachers

JEL Classification:

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1. Introduction

Eminent scientists who are involved in the process of improving the institution of education in general, have both stressed the need for teacher lifelong learning (Day 2003; MacBeath 2004; Fthenakis 1999; Tippelt 1999; Mattheou 1999) and also correctly point out the necessity for teachers' involvement in educational research (Gotovos et al. 1984; Cohen and Manion 1994; Hammersley 1999; Day 2003). As a process, lifelong learning is now considered to be essential not only for every individual worker but also for the teacher, as a modern professional, who has to be ready to make a series of adjustments in his professional life, since the historical, political and socio-economic circumstances of the 21st century regard them necessary (Xochellis 1999). Teachers, however, encounter a number of factors which impede their learning and consequently, lifelong learning, although plenty of evidence argue in its favour (MacBeath 2004).

Teachers' learning obstacles can be removed and allow them to engage in lifelong learning processes, giving them the opportunity and ability to participate in educational research procedures, which are also educational processes (Hammersley 1999). Teachers who participate in educational research processes have therefore the ability to critically reflect on their experiences**,** contemplate in a rationally and thus transform their views, while acquiring a culture of continuous learning (Mezirow 2007).

That is why we set as an objective of this article, that teachers can adopt the culture of lifelong learning through undertaking and carrying out educational researches in the course of their working life, from its beginning until their retirement. In this way, we basically show how teachers can be led to lifelong learning, which is considered an academic requirement.

Also, although it is not the main purpose of our article, we believe it is advisable to mention from the outset, the difficulties (time, lack of mentality, lack of knowledge and skills) that exist for such a venture; and of course educational research is not the one that will magically solve the problems of education and teacher participation in the process of lifelong learning.

2. The issue of educational research

Educational research (E.R.) which is part of social research (Cohen and Manion, 1994) is a systematic process of collecting, analyzing and interpreting data about the educational process. The aim of this process is to use the research findings for the benefit of teaching practice and of the educational process in general. However, educational research, as problem solving tool used by the teacher, remains wishful thinking because of the insufficient or even absent training of teachers of primary and secondary education in the methodology of the educational

research (Kalaitzidis 2006). This problem is further intensified by the fact that due to this lack, the teacher does not have a solid cognitive background compared to other fields of knowledge (Cohen and Manion 1994) and remains trapped in an empiricist way of handling his daily teaching practice (Gotovos et al. 1984).

The teacher may free himself (through his participation in the research process of the E.R.) if he can process his experiences, establish them theoretically, reflect on them critically and of course use and learn from them (Mavrogiorgos 2009). Although the international and Greek scientific community has proposed the development of the teacher-researcher model for many years, (Day 2003; Gotovos et al. 1984; European Commission, 2013a; European Commission, 2015) and the European Union regards teaching research as one of the required qualifications for teachers (European Union, 2007; European Commission, 2013b) it has not yet been adopted by the modern educational reality.

It is worth mentioning at this point the latest developments regarding teachers' attitude towards E.R. At first, teachers thought that the research inside and outside the classroom is something that doesn't concern them and besides, they didn't have the appropriate training to engage in E.R. (Tatsis 1986). Also, Dottrens et al., in 1966, noted that practicing teachers were negatively disposed towards ER .This attitude emerged either from their lack of training which still exists today or because they subconsciously believed that the research process will be used as a means of control, revealing various gaps and weaknesses. This skepticism is compounded by the mistrust of the university community, who unofficially believe that teachers cannot carry out a research because of their lack of training (Kyridis et al. 2004).

However, we cannot overlook the positive attitude that is constantly being formed by teachers towards E.R. (Kalaitzidis 2006; Ekiz 2006; van der Linden et al. 2012). More and more teachers-postgraduate students in the field of pedagogy engage in E.R. with an increasing trend, i.e. more and more teachers attend post-graduate programs which would make them engage in educational research (Skouras et al. 2007; Lakassas 2015). This shows us that the ER constantly gains ground in the educational world. It is significant and encouraging that most teachers maintain a positive attitude not only for research, but they would also like to be able to involve themselves in an ER as members of a research team (Kalaitzidis 2006). Which makes it clear that in this way the desired bridge between educational research and educational practice will be achieved (Gotovos et al. 1984). At the same time, there will also be a more effective way of communicating the research findings so that they can be better used in educational practice (Skouras et al. 2007); because the teacher

should have the necessary knowledge and skills on E.R. in order to be able to utilize its findings (Kalaitzidis 2006).

That is why we should make the most of this opportunity and set as a strategic goal of the educational policies of teachers their training in the methodology of the E.R., with a view to promote the teacher as a researcher who will carry out researches on his own. After all, the teacher is the one who has a privileged position in the triangle teacher-student-curriculum since the classroom is the natural place for the teacher-researcher to study, as opposed to external researchers for whom the classroom is an external space.

At this point of our chapter, we should also mention that we choose E.R. over action research because E.R. is considered a prerequisite for the teacher's participation in an educational action research, because this is one of the methods of the E.R. (Cohen and Manion 1994). But action research is also a process in which teachers are treated as a unit dependent on the researcher and therefore manipulated, something which totally opposes the modern idea of Adult Education (Kapachtsi and Kakana 2010; Day 2003).

3. When educational research meets adult education

E.R. is considered not only a research process, but also an educational process and as we seek to underline in this chapter, it has a lifelong perspective for the participating adult teacher (Mavrogiorgos 2009).

As adults, teachers should be pushed to adulthood which encompasses the elements of personal growth, perspective and autonomy (Rogers 1999). That is why we argue that the best way to meet the above features is, if the teacher can carry out and of course use an E.R.

The research process of the ER is a purposeful process, because the researcher is asked to plan in advance the purpose of the research, to define the research problem and decide on the research methodology to be followed in order to answer the research questions. This suggests that the ER, as a purposeful process, is also a voluntary and intended learning activity: it could be a "learning episode" for the participating teachers (Rogers 1999). Such a learning episode which occurs within an ER, gives the teacher the opportunity to act while looking into a "personal problem" which, in our case, refers to a problem of teaching practice. In this sense, then, we notice that this research-learning process leads to the reconsideration of the teacher's experience (Day 2003) and therefore enables him to transform his views and give meaning to his experiences (Mavrogiorgos 2009).

Thus, participation in the research process of the ER involves the teacher in a better understanding of himself and contributes to his personal development (Day 2003) and growth,

expanding and making the most of all his skills. In the light of the above discussion, teacher's involvement in the research process of the ER can add to him elements of self-knowledge, which is also the ultimate goal of Adult Education (Rogers 1999).

We should mention at this point that by engaging in educational research within their professional life, teachers have the opportunity to disengage from a rather mechanically repetitive work (Gotovos et al. 1984) since it is constantly enriched by research data and the use of teachers' experiences. The research process of the ER can be seen, therefore, as a systematic, scientific method of using and applying the knowledge and experience of teachers. This has great value because the teacher will be able to enrich the educational process with new knowledge that, to an extent, produces himself. After that, he has to make certain decisions regarding the teaching practice. In this way, the teacher, as mentioned above, not only produces knowledge, but he is also expected to apply it. This process is indicative of a mental and intellectual autonomy, which is another feature of adulthood (Rogers 1999). Of course, participation in decisions concerning his own teaching practice is a missing link with the theory of andragogy which is a humanitarian approach to adult education; it is also indicative of teachers' inclination to define themselves, which is another element of adulthood (Kokkos 2005).

So, after being "released" from a sterile and repetitive educational practice, the teacher can achieve a more balanced professional life, a constantly evolving way of thinking, that will lead him to better judgments regarding his teaching practice. Within the above framework, his professional life, ensures in the best possible way for the teacher, a sense of perspective for him both as an individual and as a professional, which is also one of the characteristics of adulthood (Rogers 1999).

At this point it should be mentioned that the planning and implementation of an ER is binding for the teacher and makes him responsible for all the decisions and actions that will be taken in order to complete the ER. Therefore, another component of adulthood is the promotion of responsibility (Rogers 1999).

Inevitably we could argue, in the context of our discussion above, that participating in a ER is an educational process that promotes adulthood and for this reason it is also a process that supports and promotes the educational process of Adult Education. That is why we so heartily embrace the view that, if we want to deal with the teacher as an adult, we only have to make him become involved and able to carry out educational researches either individually or collectively in his career (Mavrogiorgos 2009).

4. The relationship between educational research and teacher lifelong learning

Rapid and radical developments in the latter half of the 20th and 21st century, in the fields of science and technology, have created the appropriate conditions for the so-called "societies of knowledge" (Prokou 2004). And new demands about education in general but also for the teacher arise from these societies. The teacher is expected to make a continuous effort to acquire knowledge, not only because knowledge is constantly changing, but because through knowledge critical thinking is cultivated and critical reflection on the educational practice is promoted as well. Consequently, a demand arises which can only be met and verified through the process of teacher lifelong learning (Xochellis 1999). These conditions put forward the type of the "critically reflecting" teacher (Kasoutas 2007), who is open minded, free from prejudices and willing to hear different views (that he critically processes), and who also has the courage to acknowledge his mistakes. At the same time, the teacher should abandon his role as dispenser of information, of theoretical and practical knowledge and become a "facilitator of learning" organizing learning processes (Xochellis 1999).

In order to respond successfully to their new role, teachers must be committed to learning, making themselves lifelong learners since this is a structural element of their professional status (Mavrogiorgos 2009). Moreover, in this way, teachers can be learning role models for their students (Day 2003). But apart from the above, lifelong learning has become a new requirement for teachers working in schools (Day 2003).

The desirable objective is, therefore, to involve teachers in processes that promote and facilitate lifelong learning. That is why the teacher is asked to plan and carry out his own educational research. A safe way to integrate teachers in the lifelong learning process is to organize their professional life accordingly, promoting writing skills while encouraging them to think and act within the planning and implementation of the ER (Mezirow 2007).

It should also be mentioned that the research process of the ER has as its starting point the definition of the educational-research problem. Consequently, the teacher enters a detachment process from educational practice. This is a fundamental methodological principle (Mavrogiorgos 2009), resulting from the process of ER. So, the teacher is basically called to process his experience, underlining the educational problem. We therefore support that the research process of the ER engages teachers in processes of negotiating their experience through international and domestic bibliography, which give them the opportunity to establish it theoretically and gain insight into it (Smyth 1995). Thus, teachers gain experience which is firmly established on their educational practice while at the same time they engage in processes of transforming their views since their experience can be an object of analysis and

reflection (Day 2003). So the teacher who is working on an ER has the opportunity and ability to learn from his experience because he is actually asked to reflect on it through the scientific method of the ER research process. Therefore, we refer to the so-called experiential learning (Kokkos 2005) and in this sense the ER becomes an experiential learning process (Phillips 2012) and not just training. Teachers learn from their experiences as part of the research process and attribute to them a driving force of lifelong learning, because they prepare the teacher for a new research which will motivate him to acquire further knowledge and cultivate his critical thinking skills (Kokkos 2005).

The processing of teachers' acquired experience leads to the activation of critical reflection, due to the study of various scientific articles regarding the educational problem raised (Lintzeris 2007). In this way, they set out the requirements needed in order to analyze their earlier beliefs, find out how these were formed and make conscious choices in their teaching practice (Britzman 1991). In other words, through the process of critical reflection, teachers are asked to create a dialectal relationship between theory and practice, knowledge and experience, their biography and the social structures and thereby, transform the terms and conditions of their work (Mavrogiorgos 2009). At the same time, by engaging in critical thinking , the teacher can be lead to a holistic reconsideration of the way he perceives, feels, thinks and acts; that is reach critical self-reflection (Kokkos 2005).

So, if the teacher- through planning and implementing an ER- can enter into processes of critical reflection and self-reflection, he can as well enter into the process of rational dialogue, because this is the means by which we try to understand the meaning of facts and of the arguments formulated (Mezirow 2007).

Additionally, rational dialogue is the means of communication among objectively and rationally knowledgeable teachers, because they come in contact, as mentioned above, with the current and relevant bibliography and they don't base their views on subjective judgments (Lintzeris 2007). This communicative process can be constantly improved, since teachers will get in touch with even more words and concepts within the research process of the ER. The more words and concepts the teacher owns and uses, the more easily he can communicate through rational dialogue; understand meanings and also express his thoughts and feelings (Stathopoulos 2007). All the above results in the building of a shared meaning through the understanding of the various arguments made during the development of the ER. This also contributes to sound decision making and to the undertaking of initiatives and actions concerning the teaching process.

It is evident then, that the participation in an ER enables the teacher to activate his critical thinking skills and also become involved in processes of critical dialogue. These two "pillars" provide the necessary conditions for the so- called transformative learning, which has a lifelong learning effect on the participant teacher-researcher (Mezirow 2007).

Also, the ER refers to a process in which teachers set their own research objectives, they select their bibliography as well as the most appropriate statistical methods for the analysis and interpretation of their data, and they finally reach conclusions which are a kind of assessment. And that is why we support that the ER -as a process- encompasses not only educational characteristics but also characteristics of self-directed learning. So, if the ER can be characterized as a self-directed learning process, it can also be a technique and strategy for the promotion of lifelong learning (Kalogrides 2014). And as a self-directed learning process, the ER could replace in many cases, the teacher's involvement in training programmes of high economic cost and quite often of questionable effectiveness because they have no experiential quality.

5. Conclusions

If teachers can embrace the process of lifelong learning by planning and carrying out educational research throughout their career, this would give them the opportunity to:

a) Update their knowledge. A professional can no longer survive based exclusively on the basic knowledge he acquired at university. (European Commission 1993). The teacher will have the opportunity to come into contact with the new knowledge that is constantly being produced at such a great speed (Xochellis 1999). We note that the ER ensures not only the contact with the new knowledge but also a constant contact with learning, which fully complies with the so-called "new type of man" who learns throughout his life: the "Homo discerns" (Kanaki-Protopappa 1999).

b) Evaluate their cognitive skills. Adopting a lifelong learning outlook does not only require the transformative learning of those involved; this process also contributes to the evaluation of their cognitive skills, affecting, in this way, their self-concept and self-esteem (Kanaki-Protopappa 1999). This argument also leads us to processes of teachers' self-knowledge, which is the main aim of the educational process of Adult Education (Rogers 1999).

c) Strengthen their autonomy and self-determination as adult professionals. By adopting the process of lifelong learning, the teacher who plans and carries out educational researches throughout his career, satisfies the longstanding demand of pedagogy to bridge the gap between educational research and educational practice (Gotovos et al. 1984). Moreover,

the teacher has a leading role and actively participates in decisions which refer to his teaching practice. This process is conducive primarily to autonomy and also to the teacher's self-determination and is one of the main objectives of adult education (Rogers 1999).

Therefore, since lifelong learning can constitute for today's educators a struggle for obtaining and preserving their autonomy, teachers can, consequently, cultivate and develop their personality through equipping their professional life with a sense of perspective and strength to act as responsible citizens. This sense of autonomy will strengthen teacher incentives for participation in social affairs beyond the one-dimensional, mechanical and repetitive work of a teacher's everyday life. In parallel, we should mention that the development of critical thinking and rational dialogue, which a teacher develops in the framework of designing and implementing educational research, means that he can be led to a holistic re-evaluation of physical, biological, social and technological reality. This makes teachers more capable of approaching knowledge in an interdisciplinary manner, i.e. as a system of interdependent parts. Teacher lifelong learning can, therefore, constitute an important factor for sustainable development in today's world since sustainable development requires the modification of human behavior and, consequently, of our educational culture both at individual and team level (Kalaitzidis et al. 2011).

At the same time, ER and therefore lifelong learning, keeps the teacher in a state of constant vitality where even towards the end of his career, he will have the opportunity to learn; and the older the learner is, the more it means to him, because of the self-education, self-esteem and self-confidence that the research process of the ER provides (Kanaki-Protopappa 1999). These features thus, ensure in the best possible way, both acknowledgement for the teacher and a sense of perspective and ongoing professional development which is a prerequisite for adulthood and adult education (Rogers 1999).

In this sense then, we would argue that Educational Research could become the target and vision for teacher lifelong learning.

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Improving Reading Difficulties in a Student with Mental Retardation: A Case Study from the Peloponnese Region

Abstract:
Reading is one of the most basic academic skills of a school program in special education, as its acquisition is essential for the acceptance by the social network, the equivalent social development and the gradual educational process. The purpose of this research is to examine the factors that are involved in the special teaching of reading to students with mental retardation. The methodology is based on the case of a student that is 14 years old with mild mental retardation (MMR) and reading difficulties. She is attending the last grade of the Experimental Special Primary School, at the region of Peloponnese. The results are referred to the effectiveness of the teaching program that focused on the improvement of the student's reading skills.

Key-words: mental retardation; reading difficulties; teaching program

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1. Introduction

Reading as phonological and language skill, is the foundation of learning development (Snowling, Hulme, 2012). According to the Greek Curriculum and the Framework Curriculum for Special Education (FCSE, 1995) for Students with Special Educational Needs, reading is one of the most basic academic skills of the teaching program at general and special education, respectively. The acquisition of reading is a complicated teaching issue and there is an intense discussion concerning the way that it must be taught (Christakis, 2006; Irwin, 2003, p. 29; Takala, 2013).

However, when thinking that reading is an ability related to the intelligence quotient (IQ) of the students, we are more concerned about the difficulty of the teaching reading strategies for students with cognitive disabilities. According to Al Nahdi (2016), there is a significant need for effective intervention strategies in order to confront the teaching difficulties on students with mental disabilities.

We know that students with cognitive disabilities are able to learn how to read, even with difficulties. A research conducted in Bavaria in 1629 students with intellectual disabilities of all education levels in five different types of special schools showed that students have a wide variety of literacy skills. More specifically, teachers describing a questionnaire reading level and writing of their students, according to Valtin model corresponding to three literacy stages designated by Firth (first stage: Logographemic, second stage: Alphabetic stage and third stage: Orthographic stage) showed the following results: 29.3% of students with ID (with severe ID) do not read at all, the 6.8% reading at a logographic stage, 31.9% at Alphabetic stage, while the largest proportion, 32% reads at orthographic stage. In addition, it turned out that reading and writing skills are improved from elementary school to secondary school, and older students have higher literacy skills than younger students. Therefore, it can be assumed that progress made over a long period of school years for two-thirds of the students. This information allows us to be optimistic about finding effective social educational instructional and economical policy (Ratz & Lenhard, 2013).

According to Channell, Loveall & Conners (2013), at first we have to identify both strengths and weaknesses in reading skills in order to increase the efficiency of the teaching strategy. In Greece, according the Ministry of National Education and Religious Affairs – Pedagogical Institute, (2009) the teaching method of reading in student with MMR requires the evaluation of the abilities and the difficulties of the students into social economical environment on behalf of the special educator, considering the level of development of their

reading readiness. In special education, the acquisition of reading readiness is associated with the neurological maturity and neuroeducation (Drossinou, 2016) The learning process depended from the oral ability, the development of cognitive capabilities, the visual and the hearing discrimination, the psychomotor activity, and the emotional organization.

2. The reading disabilities of students with mild mental retardation

Intellectual developmental disorder includes both intellectual and adaptive functioning deficits. It is characterized by deficits in general mental abilities, such as reasoning, problem solving, planning, abstract thinking, judgment, academic learning, and learning from experience. According (DSM V, 2013), the deficits identified in the regions of adaptive functioning, of personal independence and social responsibility of daily life, including communication, social participation, academic or occupational functioning, and personal independence at home or in community settings.

Researches on strengthening of reading skills to students with intellectual disabilities are quite limited (Allor et all., 2010). It is important that the teaching to students with mental retardation to be treated as a complete process that includes: instruction targeting oral language, phonemic awareness, alphabetic knowledge, phonemic decoding, and basic comprehension strategies. Under this assumption, the teacher must understand all these factors that affect the reading ability of students with intellectual disabilities as we study into the social economical environment in region of Peloponnese.

The factors that are hampering the reading attitude of a child with MMR are the dysfunctional abilities in memory, in time and space orientation, in visual and motor coordination (Christakis, 2000, p.185).

The perceptual disabilities are more frequent to children with MMR, in comparison with their peers. Regarding the perceptual and mainly the visual functions, the students with MMR usually fail to perceive visual sequences or to clasify and identify the same or different shapes, letters, syllabes and words (Christakis, 2006, p.189). A similar picture is observed in the auditory skills, as they show an inability to distinguish audiovisual words or syllables.

The child with intellectual deficits is necessary to approach the learning of reading having gained the sense of space and time. The reading behavior of students with MMR identified as it often loses his place in the page, jumps lines or reads wrong letters into the words, finds it difficult to pronounce certain words, fails to place events in the correct chronological order or orient from left to right (Allor, et all., 2010). This last feature is also a

result of the inability of these children to be visually and motor coordinated. The visual-motor skill is important for both reading and writing (Christakis, 2000, p.192).

The mnemonic functions of students with intellectual disabilities are also an important factor that affects their reading skills. Therefore, these students are unable to encode or visually distinguise an information, because of their weak short-term memory (Connor, et all., 2014). For example, they show poor performance in activities such as remembering cards that show syllables (visual memory) or repeating words and sentences or finding words that heard from the teacher on a page (aural memory).

In addition, children who have difficulty in comprehension what they read, they often have less capacity in the working memory than children who do not have cognitive difficulties. During reading, they fail to restrain a series of phrases that they read, in order then to remember the meaning (Connor, et all., 2014).

Rechearchers Grieco, Pulsifer, Seligsohn, Skotko, & Schwartz, (2015) in their study for the cognitive and behavioral functioning across the lifespan to people with Down syndrome refer in a deterring factor in the learning of reading. Children with intellectual disabilities «show impairment in many aspects of attention (e.g., auditory sustained attention, visual selective attention)» that extend beyond that expected for mental age. Selective attention deficits persist through adulthood and contribute to difficulty prioritizing, staying engaged with a task, and consistently responding in the same manner to certain situations, thus limiting one's ability to function and ultimately reside independently». The mentally retarded child has attention disorders and is deprived of perseverance and concentration. The student shows weakness in focusing on his interest, as he is unable to hold his reaction to stimuli. The development of the ability to concentrate is a necessary condition for the acquisition of learning such as reading (Drossinou, et al., 2009, p. 132).

It is importart to mention that people with intellectual disabilities might face difficulties in reading because of emotional and social, cultural and economical factors. Their emotional organization, such as low self-confidence eg they do not accept failures, not appreciate themselves and not address their problem in the subject, and their family environmet with poor stimuli, are disadvantages for the conquest of the reading mechanism. More generally, in families in which there are adverse conditions, children with mental retardation are negleted and their language development is decelerated. (Christakis, 2006, p. 169),

The conceptual delimitation of reading difficulties led to the need of application teaching methods such as those that are proposed by Moran, Smith, Meads & Beck, regarding

the understanding of words with the help of images (1996) or the enrichment of the vocabulary with diversified activities, as proposed by Gillies in to his article «Language through Reading» (Gillies, 1986).

At the first teaching project, the teachers identify the words that the students have difficulties on, choose about six of them and write them down to six different cards. Then, they choose pictures that are associated to these words and create sentences by presenting the words and the pictures simultaneously, repeating the sentence. They emphasize the selected word, match the word with the card, and finally, when the student remembers all the words, he returns to the notebook and uses the pictures if he is not able to remember all the words of the text. At the second teaching project, the student comprehends that each word of a sentence corresponds to a different color – color strip depending on the part of the speech (eg. the student understands that the article corresponds to white color, the noun corresponds to orange, etc.). Then, the student must match each word with a picture, starting from the nouns and then match the picture with the verb. After completing the sentence with the pictures, the teacher takes the color strips and gives a plastic wallet to the student, where he puts the pictures and the sentences inside.

This process is repeated until the sentence and the picture are correctly positioned. This method is useful for the children to learn words in the longer term. It has been observed that children with severe problems managed to improve with the use of this method in the long term. In addition, according Lewis, (2014) practices and strategies for strengthening the reading ability of students with intellectual disabilities within the school community are mentioned like creating a story with the use of pictures and words, the comprehension of the environmental signals. Also the comprehension practices with the text through questions that the teacher asked, the use of written instructions that can be used in their daily life. All these techniques complete the learning process of reading ability which is the generalization of the daily activities of students with intellectual disabilities (Lewis, 2014).

Individuals with MMR need systematic and structured teaching in reading comprehension. According to Lundberg and Reichenberg (2013), students with intellectual disabilities will benefit from well designed and systematic text conversations in small groups guided by the teacher. In their study they assumed that reading comprehension is acquired through an interactive social setting that enables students to negotiate with their peers and teacher to make meaning from the text. The participants were 40 adolescents in special schools divided into two intervention conditions: Reciprocal Teaching (RT) that involved a dialogue between teacher and students regarding segments of text, and Inference Teaching

(IT). Their ability to read was assessed with test instruments covered word recognition, sentence comprehension, fluency, reading comprehension of connected passages and listening comprehension. This study demonstrated that students with MMR are capable of constructing meaning from written text by guided social interaction between students and teacher.

3. Targeted, Individual, Structured, Integrated Program for Students with Special Educational Needs (TISIPfPSEN)

According Drossinou, (2014), for the support of the students with mental retardation regarding their reading skills, it is recommended to the educator of each class to develop a pedagogical tool Targeted, Individual, Structured, Integrated Program for Students with Special Educational Needs (TISIPfPSEN)

According to this, each teaching program must be:

Targeted: the teachers should set each time targets that are adapted to the needs of the student with mild mental retardation, which will help them to build and shape their teaching programs. The learning objective 'includes skills, knowledge, experience and attitudes which the student must conquer or develop during the teaching process that is followed' (Christakis, 2013, p. 134). Each target is required to be functional, which means that it must be described clearly and precisely, and the analysis of smaller sub-objectives – steps (Task analysis) is an essential process for the gradually acquisition.

Individual: an important prerequisite for the effective implementation of a teaching program for children with mental retardation is the personalization of teaching (Paraskeuopoulos, 1979, p. 167). The principle of individualization of teaching requires the implementation and the adaptation of the teaching program by the teacher to the needs and the abilities of the children with intellectual disabilities. "Personalization refers to a teacher's relationships with students and their families and the use of multiple instructional modes to scaffold each student's learning and enhance the student's personal competencies. Personalized learning varies the time, place, and pace of learning for each student, enlists the student in the creation of learning pathways, and utilizes technology to manage and document the learning process and access rich sources of information" (Redding, 2014).

Janet Goepel (2009) notes that both parents and children should be actively involved in the decisions that surround the child's special educational need. Therefore, an individual education plan involves teachers, parents and pupils in the learning process, in order to distinguish the needs of children with Special Educational Needs (SEN). The partnership between the teacher, the child and the parent is fundamental to the successful outworking of the individual education plan as well as to the progress in child's learning. The same article also mentions that there must be total agreement between the parties involved with regard to

the nature of the difficulties faced by the children or the objectives and the strategies that meet these needs, in order for the plan to be effective. In addition, the plan must be adapted to the concerns and interests of children.

Structured: according to Drossinou (2007), the structuring of the curriculum consists of the following phases: a. the empirical record of the individual background of the student from the school and family environment, the report of the Centers for Differential Diagnosis and Support (CDDS) and other services, b. the informal pedagogical evaluation based on the Framework Curriculum for Special Education (FCSE, 1996) for students with SEN, c. the design of the curriculum, d. the implementation of the intervention with activities that are directly related to the students' interests and weaknesses and e. the evaluation of the intervention taking into account any information from daily, weekly and monthly records of the student's progress in order to resupply and reinforce the program.

Integrated: each curriculum is essential to promote the school, social and economical integration of students with intellectual disabilities. The integration of children with SEN supports the principles of equality and diversity. It is every child's right to cohabit with other children and receive equal learning opportunities. "The coeducation of people with SEN with their peers is the greatest achievement and the most important innovation in special education." (Christakis, 2006, p.150). Its achievement requires the design of curricula. This marks the prominent role of the teachers, as they are the key to the development of more inclusive forms of education. Their beliefs, attitudes and actions are what create the educational context (Ainscow & Miles, 2008).

4. Purpose of the research

Our research covers the needs that are related to the individualized teaching programs, with emphasis on reading comprehension in students with MMR. It is often assumed that students with ID are not able to acquire literacy competence, as very few studies have been published on how reading comprehension can be improved among these students. Thus, reading instructions by teachers are traditionally focused on strengthening literacy, underestimating the students' ability to understand written text (Lundberg & Reichenberg, 2013).

It is, therefore, examined whether the application of a TISIPfPSEN (Drossinou, 2016) facilitates the dealing of teaching the reading difficulties of the student with MMR.

5. Methodology

5.1 Tools for collection of qualitative data

The methodology in this research is mixed, consisting of data collected with research tools based on the experiential participatory observation, intervention and special teaching

according the special education and training action research (Avramidis & Kalyva, 2006 p.182-218, 219-271, 253-257; Drossinou, 2016). The processing, analysis and classification of data was performed by the method of multiple analyses. Participatory observation is a special kind of qualitative observation, which holds an important position in researches with students with mental retardation (DSM-V, 2013). The observer becomes part of the social group that interests him and participates in the activities.

5.2 The case study is described in the first phase where it is recorded the individual, school and family history

The case study is a methodology or research strategy and is defined by Yin in the book entitled "Research Methods in Special Education" (Avramidis & Kalyva, 2006) as an empirical research that examines a contemporary phenomenon within its real context and this phenomenon does not exist independently of this context. The case study concerns a 14-years old student who attends the last grade of a special primary school. She was diagnoses in 2006 by the Centers for Differential Diagnosis and Support (CDDS) with intellectual disabilities and speech problems.

5.3 Methodology of Observation

According Drossinou (2014) the Informal Pedagogical Evaluation (IPE) with Basic Skills Checklists (BSC) is described in the second phase of the TISIPfPSEN with the participatory observation. The IPE was carried out in three phases, the initial, the intermediate and the final, and included the BSC, one for each section of Learning Readiness (LR) [Table 1]. These checklists are referred to Oral Language, Mental Skills, Psychomotor activity, and emotional organization (Drossinou et all., 2009, p.18-19). Moreover, the IPE was exploited with the use of empirical observations reflected in a table with BSC for Special Educational Needs [Table 2] as they are described at the Framework Curriculum for Special Education (FCSE) and include various sections such as Readiness, Basic Academic Skills, Social Skills, Prevocational Readiness etc. Finally, it was given the List of General Learning Difficulties (GLD) [Table 3] according to the Curriculum of General Education for language courses. These tables consist of vertical columns, including mainly academic skills, behavioral skills, etc. and lines that focus on the semesters and the deviations from the baseline (student's semester: F' Grade), according to the observations of the student's behavior in the classroom and in the courtyard.

Table 1: Table of Checklists of Basic Skills: Learning Readiness (LR)

Methodology of Observation

General Learning Difficulties

Grades / Semesters	Name student: G.M.								Sixth grade of primary-First			Age: 14		
	Language skills				Learning readiness skills				Mathematics skills			Behavioral skills		
	Reading	Comprehension	Writing	Writing production	Oral Language	Psychomotor activity	Mental Skills	Emotional Organization	Numbers	Mathematical operation	Solving mathematical problems	Positive behaviors	Negative behaviors	Delinquent behaviors
Sixth grade of primary-Second semester														
Sixth grade of primary-First semester														
Fifth grade-Second semester														
Fifth grade-First semester														
Fourth grade of primary school-First semester														
Fourth grade of primary school-Second semester														
Third grade of primary-Second semester														

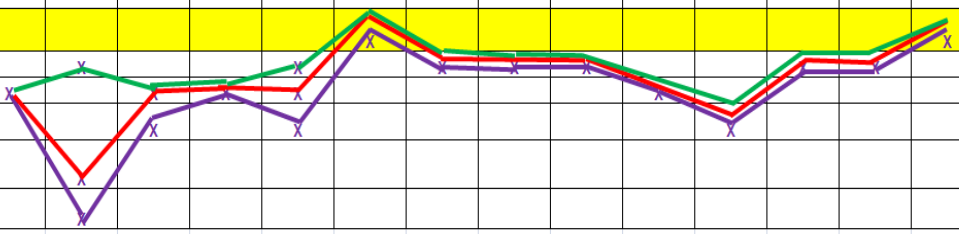

Table 2: Table of Checklists of Basic Skills: Framework Curriculum for Special Education (FCSE)

Methodology of Observation

Framework Curriculum for Special Education

Grades/ Semesters	Name student: G.M.								Sixth grade of primary-First semester						Age: 14
	learning readiness				Basic school skills				Social skills			Creative activities		pre-vocational readiness	
	Oral Language	Psychomotor activity	Mental Skills	Emotional Organization	Reading	Comprehension	Writing	Mathematics	Autonomy in the environment	Social behavior	Adaptation to the environment	Free time	Aesthetic arts	prevocational skills	Vocational orientation
Sixth grade of primary-Second semester															
Sixth grade of primary-First semester															
Fifth grade-Second semester															
Fifth grade-First semester															
Fourth grade of primary school-First semester															
Fourth grade of primary school-Second semester															
Third grade of primary-Second semester															

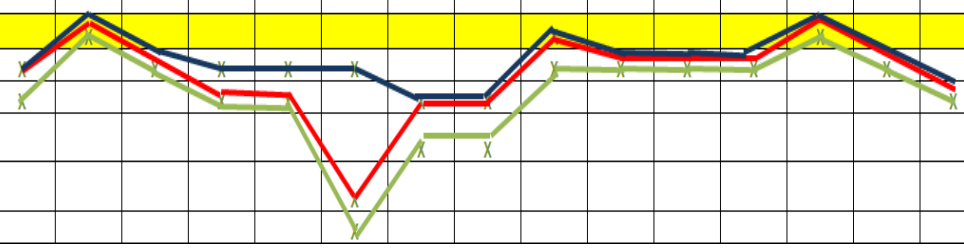

Table 3: Table of Checklists of Basic Skills: General Learning Difficulties (GLD)

Methodology of Observation

General Learning Difficulties

Grades / Semesters	Name student: G.M.								Sixth grade of primary-First			Age: 14		
	Language skills				Learning readiness skills				Mathematics skills			Behavioral skills		
	Reading	Comprehension	Writing	Writing production	Oral Language	Psychomotor activity	Mental Skills	Emotional Organization	Numbers	Mathematical operation	Solving mathematical problems	Positive behaviors	Negative behaviors	Delinquent behaviors
Sixth grade of primary-Second semester														
Sixth grade of primary-First semester														
Fifth grade-Second semester														
Fifth grade-First semester														
Fourth grade of primary school-First semester														
Fourth grade of primary school-Second semester														
Third grade of primary-Second semester														

The observation was carried out in two frames, in the classroom and the yard of the special elementary school, in three phases during the teaching intervention with tables of experiential informal pedagogical observations: The initial IPE (15/10/2013 – 18/12/2013) was implemented before the beginning of the teaching program. The intermediate IPE (22/10/2014) took place after the first 8 teaching interventions, in order to replenish the program. The final IPE was implemented after the completion of the program (01/04/2014).

5.4 Methodology of Intervention

According Drossinou (2016), there were collected data by hetero-observation and self-observation of the teacher with the use of the Form of the Teaching Interaction (FTI).

5.5 Methodology of Special Teaching that refers to the third, fourth and fifth phase of the TISIPfPSEN.

The teaching program is described in the third phase and was designed in accordance with the principles of FCSE, setting the teaching goals monthly, in order to lead to the final teaching goal, which was: "The student is able to read and understand any text, answering to questions". The materials that were used were mainly visual mental facilitators and the box containing appropriate words to enable the student to answer to the questions (Drossinou et al., 1999, Christakis, 2013).

The implementation of the teaching program is described in the fourth phase of the TISIPfPSEN, where there was applied a direct, individual teaching, during which we set the teaching steps that were constructed with the differential activities for reading skills with emphasis the ''just'' visual mental facilitators (Drossinou, 2016). Below are some examples of these teaching steps in order for *the student to be able to read and understand ten lines of text:*

1. By placing the visual mental facilitators (pictures) correctly [Figure 1].
2. By placing the visual mental facilitators (pictures) correctly and answering to the questions by choosing the correct words [Figure 2].
3. The student is able to read and understand the text, by placing the words in the correct order [Figure 3].
4. By placing the words in the correct order and answering to the questions by choosing the correct words [Figure 4].
5. By answering to the questions by choosing the correct words [Figure 5].

Figure 1: The student reads the text placing visual mental facilitators to the gaps of the text.

Figure 2: The student chooses 8 words from the box and answers to the questions.

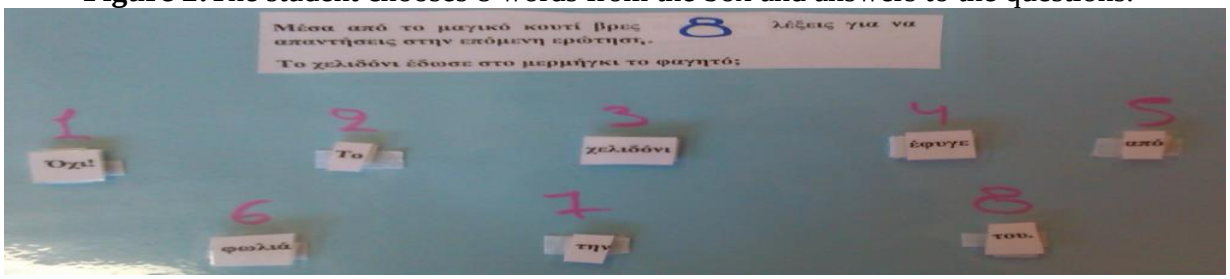

Figure 3: Reconstructing text

Figure 4: Reconstructing texts

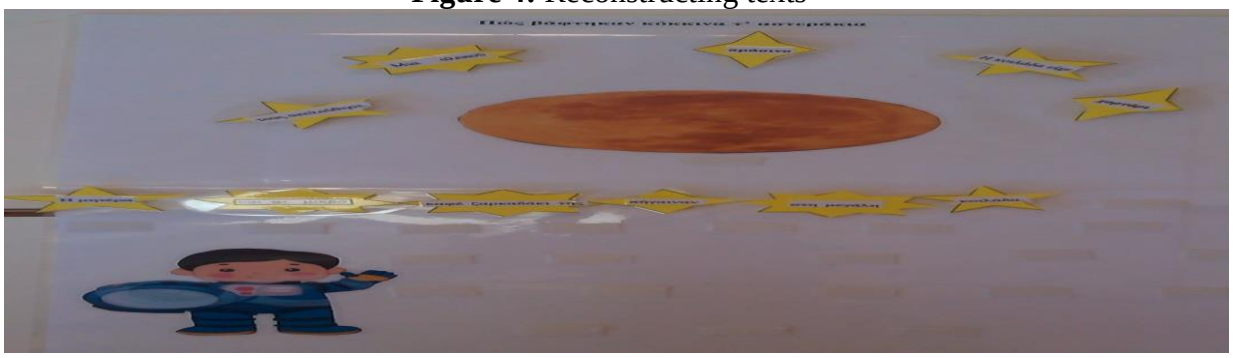

Figure 5. The student chooses words from the box and answers to the questions

The evaluation of the program is described in the fifth phase of the TISIPfPSEN and was accomplished after the completion of the teaching interventions through the final observation, by hetero-observation and self-observation of the teacher with the use of the Form of the Teaching Interaction (FTI).

6. The Results

After the application of TISIPfPSEN to a student with MMR, the following results were ejected, according to the quantitative data that were collected with the use of Observation and the changes that were noted in the tables, FCSE, LR and GLD showed improvements in reading and comprehension skills. Well, we proved that the TISIPfPSEN (Drossinou, 2014) facilitates the dealing of teaching the reading difficulties of the student with MMR. During the initial IPE, the student's performance text comprehension was five semesters below the baseline (green line). During the intermediate IPE, the student achieved an improvement of one semester (red line), where during the final IPE it was noted an improvement of four semesters (blue line), approaching the baseline of the student. At the section "Activities of Learning Readiness" (LD), according to the initial IPE, the student presented low levels at "Oral language" and "Self-confidence" (blue line). However, during the final IPE there was noted an improvement of 2 semesters above the line of the initial IPE, for both of these sections (red line). Finally, at the table "General Learning Difficulties" (GLD), at the sections "Comprehension" and "Oral language", the student presented a deviation of 5 and 3 semesters below the baseline, respectively (purple line). According to the intermediate IPE, the student improved over one semester in "Comprehension" and "Oral language" sections (red line). According to the final IIE, there was noted an improvement of 3 semesters in "Comprehension" section compared to the intermediate observation and one semester in "Oral language" section (green line).

According to the Form of the Teaching Interaction (FTI) and the quantitative data collected during Intervention, it was noted that the differentiated teaching could help the student with MMR. Also, the selection of texts according to the reading readiness of the student, the modification of some of them by utilizing reading strategies such as reconstructing the text, the addition of visual mental facilitators and the choice of activities for reading comprehension (choosing words from the box to answer to the questions), were all factors that contributed to the achievement of the teaching goal. Moreover, it was recorded the degree of the student's autonomy to accomplish the activities of reading skills with a little help by the teacher.

7. Conclusions

This research conclusively demonstrates that through the application of the TISIPfPSEN, a plan of teaching intervention structured in five phases is offered to the teachers involved in Special Education and Training (SET) which ensures more functional teaching goals and more precise evaluation of the learning process (Drossinou, 2007, 2014; Christakis, 2013).

The success of a teaching program requires the application of basic educational features in order to be effective for readers with average IQ. Teachers should be equipped with materials and professional training and keep a close watch on the progress of their students, in order to modify the program and ensure the its success (Allor, 2010) and social, economical environment.

Students with mild to moderate mental retardation can learn basic reading skills if given consistent, clear and comprehensive teaching of reading. However, the time required to achieve the basic skills of reading is greater than the time compared to "normal" students (Lewis, 2014).

Alnahdi, after a literature review on researches related to teaching methods for students with ID, pointed out the fact that there are plenty of teaching strategies that have been proved efficient for developing reading comprehension, as long as they satisfy some requirements: 1) Clear and guided teaching (Explicit/Direct Instruction), choosing structured goals that are the core of the teaching, 2) long period of time (Long Period), 3) following a system (Systematic), as it is essential for students with ID to follow a systematic order of practices in order to strengthen their abilities, 4) the Intellectual Disability's Level, structuring different teaching policy for each one of them for developing reading ability.

Additionally, firstly, it becomes clear that the curriculum for students with SEN is essential to be individualized and fit to the student's personality, in order to create appropriate learning environments for all the students (Anstotz, 2012). Secondly, it is obvious that during

teaching, the interaction between student and teacher is effective for the complication of the intervention. Text conversations formed by guided clarifying questions on behalf of the teacher, were effective for the teaching goal. According to Lundberg and Reichenberg, (2013), reading comprehension is acquired through an interactive social interaction between students and teacher.

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Inefficiency Effects and Frontier Determining Factors: A Survey towards Technology and Innovation

Abstract:
A definition of efficiency is that efficiency is the relationship between what an organization produces and what it could feasibly produce. In other words, efficiency of a production unit represents a comparison between observed and optimal values of its output and input. In the modern knowledge economy, growth depends extensively on the presence or the formation of a network and environment favorable to innovation, which is based on the endogenous development capabilities. This paper claims that, even though the producer-specific factors are important determinants of innovation activity, technological opportunities and favorable entrepreneurial environment have a positive effect on innovation activity, as well. Technological change, innovation and technology creation and diffusion are an important factor to economic progress. Within growth process, therefore, efficiency of production resources becomes a critical element in growth, through utilizing the available, yet scarce, resources more productively. Within this framework, productivity represents the estimation of how well a producer uses the available resources to produce outputs from inputs.

Keywords: Inefficiency Effects, Production Frontiers, Innovation, Technology, Industry Production Performance

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1. Introduction

A definition of efficiency is that efficiency is the relationship between what an organization produces and what it could feasibly produce. In other words, efficiency of a production unit represents a comparison between observed and optimal values of its output and input. This comparison comes in two forms. The first is the ratio of observed to maximum potential output obtainable from a given level of input. The second is defined by considering first the given level of input, and is measured as the ratio of minimum potential to observed input required producing the given output. By the efficiency of a producer, we have in mind a comparison between observed and optimal values of its output and input. The optimum is defined in terms of production possibilities, and efficiency is technical.

The difference between actual output and the potential output is generally attributed to a combination of inefficiency and random error (i.e. the stochastic element in production). Methods have been developed to separate out the random component from the efficiency component, so that a more realistic assessment of potential output can be achieved. That is, large levels of output that may have occurred through chance rather than as a consequence of normal practice do not overly influence the estimates. When one considers productivity comparisons through time, an additional source of productivity change, called technical change is possible.

In the modern knowledge economy, growth depends extensively on the presence or the formation of a network and environment favorable to innovation, which is based on the endogenous development capabilities. Even though the producer-specific factors are important determinants of innovation activity, technological opportunities and favorable entrepreneurial environment have a positive effect on innovation activity, as well. Technological change, innovation and technology creation and diffusion are an important factor to economic progress.

Combining the production functions in order to create and disseminate innovations leads to improvements in productivity and efficiency. However, at a given moment of time, when technology and production environment are essentially the same, producers may exhibit different productivity levels due to differences in their production efficiency. Within growth process, therefore, efficiency of production resources becomes a critical element in growth, through utilizing the available, yet scarce, resources more productively. Within this framework, productivity represents the estimation of how well a producer uses the available resources to produce outputs from inputs.

2. Inefficiency and Frontier Determining Factors

There is a huge literature on factors influencing productive efficiency and productivity growth. In this literature, it is widely accepted that decision making units are not homogeneous producing units and, therefore, not all units are operating at the same level of efficiency (Caves, 1989).

Specifically, in line with the empirical framework, based on stochastic frontier analyses (SFA) and data envelopment analyses (DEA), productivity is decomposed into the production possibility frontier and technical (in) efficiency. For this reason, there should be a distinction on what should determine the frontier and what affects efficiency. This cannot be satisfactorily achieved by drawing only on theories of exogenous and endogenous growth. Both of these relate to production technology, which lies in the domain of the frontier. On the other hand, technical efficiency relates to neo-Schumpeterian ideas of catching-up with the leaders (technology diffusion and absorption) and forge-ahead through investments in R&D (innovation creation).

However, this cannot be satisfactorily achieved by drawing only on theories of exogenous and endogenous growth, both of which relate to production technology, which lies in the domain of the frontier. Also, efficiency depends on the effectiveness of the institutional environment, which is closely related to evolutionary and institutional approaches. Recent contributions to the literature clearly emphasize the connection with theory, of empirical models for the production possibility frontier (or production function) and efficiency and they are also examined. More specifically, contributions to the literature (Kneller and Stevens, 2006, Bhattacharjee et al., 2009, and Eberhardt and Teal, 2011) clearly emphasize the connection with theory, of empirical models for the production possibility frontier (production function) and efficiency.

As stated in Bhattacharjee et al. (2009), the empirical models and inference methods can be categorized into two key methodologies: (a) the OLS regression based approach and the associated interpretation of the Solow residual as a measure of total factor productivity (TFP), and (b) frontier production function estimation where the distance from the highest achievable levels of productivity is interpreted as a measure of productive efficiency. The OLS approach supports the neoclassical concept of exogenous technology and the resulting view that deviations from the production frontier, either positive or negative, reflect only idiosyncratic productivity shocks. By contrast, negative skewness of the distribution of TFP is consistent with the combination of neo-Schumpeterian and neoclassical approaches, where frontier technology is viewed as a pool of knowledge accumulated through the innovative action of leaders and available to any productive unit. However the capacity to use such

technology depends on a costly and time consuming effort to catch up with the leaders (Bhattacharjee et al., 2009). In order to present these issues, Bhattacharjee et al. (2009) examine the following approaches:

2.1. Neoclassical growth theory

Neoclassical growth models attempt to explain long run economic growth by looking at productivity, capital accumulation, population growth and technological progress. The neoclassical model of exogenous growth considers the accumulation of physical capital, associated with a permanent flow of technical progress, as the driver of economic growth. Neoclassical growth model assumes the Cobb-Douglas production function. Growth is considered to be either an exogenous process or either achieved through exogenous technical innovations, embodied in capital goods (Solow, 1960). Solow (1956) argued that countries that differ in terms of initial productivity levels but not in terms of other aspects (population growth and saving propensities) tend to converge towards the same level and the same rate of growth of productivity. This is the result of a theoretical perspective in which technology is considered as a public good, freely available to everyone, and its dynamics is largely unexplained.

Neoclassical growth considers that capital is an immobile factor accumulated through an endogenous investment process, while technology is either completely mobile or totally endogenous [Temple (2003), Keller (2004)]. Neoclassical growth models also assume diminishing returns to capital, constant savings rate and constant growth of labour, assumptions which imply a steady state growth rate depending only on the rate of exogenous technical progress. Inputs such as human capital or R&D investment imply that TFP depends on these factors, which is more in line with endogenous growth theory (Romer, 1986, 1990). Technology is assumed to be a private good which is produced by dedicated inputs and accumulated by economic systems as a stock of ideas. If the accumulation of ideas is not restricted by the law of diminishing returns, a steady state growth process can be derived, under which TFP increases at a rate depending on the growth of labour force dedicated to innovation and on the extent to which labour is used efficiently.

Limitations of the model include its failure to take account of entrepreneurship (which may be a catalyst behind economic growth) and strength of institutions (which facilitate economic growth). In addition, it does not explain how or why technological progress occurs. This failing has led to the development of endogenous growth theory, which endogenizes technological progress and/or knowledge accumulation.

Alternative models developed by Lucas (1988) assume the existence of a pool of exogenous technology combined with different endogenous capacities, dependent on the average level of human capital, accumulated either through formal learning or through learning-by-doing. On the other hand, the distinction between an exogenous technological frontier, at global level, and efficiency, at local level, measured as aTFP gap in relation to the frontier is not clearly made, unless by neo-Schumpeterian theory of growth.

2.2. Neo-Schumpeterian theory of growth

Even though endogenous growth theory may be used in order to describe diverse development processes according distinct divergence levels, the assumption of immobile technology in Romer (1986, 1990) and the lack of clear distinction between technological frontier and efficiency in Lucas (1988) prevent the consideration of technological catching-up through diffusion mechanisms (Keller 2004). On the other hand, according to Aghion and Howitt (2006), endogenous growth theory is not suitable to derive inferences and policy regarding technical progress, leading to growth and convergence attainment.

According to the neo- Schumpeterian approach, economic growth is mainly the outcome of a permanent attempt to forge ahead, rather than being driven by factor accumulation. This idea is directly related to the concept of an upward moving technological frontier, combining the most advanced technical knowledge with best practice. However, the assumption of a production possibility frontier which every productive unit seeks to achieve (in other words, a ceiling frontier production function) is only valid for public good technology. Neo-Schumpeterian theory of growth focuses on creative destruction as the basic process leading to the upward movement of the technological frontier (Aghion and Howitt, 1992). International flows of technology arise from the attempt to catch-up with the best practices (Grossman and Helpman, 1991), a process which depends on the technology and innovation absorptive capacity (Abramovitz, 1986; Fagerberg, 1988).

According to Bhattacharjee et al. (2009), the interaction between forging ahead and catching up process defines the upward movement of the technological frontier andthe national, regional or firm heterogeneity, respectively, with respect to the capacity to reach the frontier. This interaction depends on two factors: (i) the levels of investment in human capital and R&D activities (Aghion and Howitt, 2006), and (ii)the relative importance of codified technology, technology embodied in capital goods and tacit knowledge embodied either in individuals or in organizations (Nelson,1980).

2.3. Technology diffusion

Technology diffusion involves the dissemination of technical information and knowhow and the subsequent adoption of new technologies and techniques. Diffused technologies can be embodied in products and processes. Although classic models of technological development suggest a linear relationship from basic research and development to technology commercialization and adoption, in practice technology diffusion is a complex process. Technology can diffuse in multiple ways and with significant variations, depending on the particular technology, across time, over space, and between different industries. Moreover, the effective use of diffused technologies frequently requires organizational and technical changes. Technology also diffuses through the internal "catch-up" efforts of firms, the transfer and mobility of skilled labor, the activities of professional societies and the trade and scientific press, varied forms of informal knowledge trading, and such practices as reverse engineering.

Import of technology embodied in capital goods (Solow, 1960; Caselli and Wilson, 2004), as well as disembodied technological spillovers are the two main channels through which technology diffuses. In both cases, the efficiency of technology diffusion depends on the availability of human capital and on the investment in specific forms of R&D which enhance the absorptive capacity of productive system (Aghion and Howitt, 2006). Coe and Helpman (1995) measure the effect of R&D spending of trade partners on the TFP of developed countries, while Funke and Niebuhr (2005) use a model of R&D workforce to measure knowledge spillovers across regions. These models are based on the implicit assumption of a constant absorptive capacity, informing about how embodied and mobile disembodied technology contribute to form a global benchmark frontier. An alternative procedure is to assume an invariant capacity to access exogenous technology and measure different absorptive capacities.

2.4. Evolutionary and institutional approaches

The evolutionary approach developed by Nelson and Winter (1982) and Dosi et al.(1988) considers that innovation creates mainly technological paradigms, rather than a universal benchmark, defining a technological frontier. Technological paradigms combine a set of established routines with a shared knowledge base, which determines the opportunities of future technical advances (Dosi, 1997). Dosi (1997) defines a technological paradigm as a set of procedures, or a definition of the relevant problems and of the specific knowledge related

to their solution. Such paradigms are shared by all productive units and provide the basis for the development of specific learning processes (Nelson and Winter, 2002). Technological paradigms promote learning processes at industrial level, generating industrial trajectories which are both driven by specific capacities to absorb, enhance and apply scientific and technical knowledge, as well as by changes in demand. Inside each industry, specific firms compete with each other, trying to perform better than the common benchmark determined by the floor technological standard, forging ahead through innovation. Evolutionary approach asserts that technology has a strong tacit, private good component, it is more reasonable to assume a benchmark level of productivity given by a technological floor. Over this base level, each productive unit builds its own comparative advantage using proprietary techniques and tacit knowledge. The dominance of the public-good or private-good component defines the sign of skewness in the distribution of TFP, and thus determines whether the ceiling or the floor representation of technology is more appropriate.

Productivity and innovation performance depends on the availability of skilled workforce and on the synergies arising from interactions between firms and supporting organizations. On the other hand, entrepreneurial behavior is shaped by the combination of social and political factors stressed by the new institutional economics (Furobotn and Richter, 1992), such as legal system to ensure property and intellectual rights, and the existence of a cultural and institutional framework which lowers transaction costs (Williamson, 1996).

3. Concluding Remarks and Policy Implications

European Commission development policy seeks to increase efficiency and effectiveness in a context of sustainable development. It is a cornerstone of EU policies – alongside financial, economic and trade policy (and international aspects of other policies like environment, education, agriculture and urban policies). The EU focuses on certain sectors of intervention, depending on the needs of partner countries, making an enormous contribution in raising public awareness, increasing political will and mobilizing resources together with the economic, social and environmental dimensions of sustainable development. Based on European values, the EU promotes, in its relations with partners countries, democratic values and practices such as human rights, fundamental freedoms, good governance and the rule of law.

Within this framework, based on Wang (2007), since R&D is one of the most crucial elements in promoting growth, it is argued that any production unit that uses R&D resources inefficiently may be subjected to a growth penalty in the form of a much smaller benefit from

R&D investment. If R&D resources are not used effectively, additional investment may be of little help in stimulating economic growth. Literature has already been devoted to investigating the economic aspects and effects of R&D investment. It has been considered that R&D could result in better production technology and also raise the productivity as well as the rates of return on investment at both the producer and industry levels. The positive effects of R&D investment on productivity as well as on rates of return are clearly identified. In addition, there are many other issues related to R&D, such as patenting, patent quality and business strategies that have been discussed in the economic literature. However, the existing literature has focused primarily on efforts to engage in new investment and comparatively little attention has been paid to the effective use of R&D resources once they are in place. This is a potentially important omission, since the very conditions responsible for economic backwardness may operate through the poor management of the means of engaging in R&D. Therefore, knowing the nature of R&D performance by examining its relative efficiency across production units is the first required step for designing policies that intend to improve resource allocation.

Technology and innovation play an important role in economic growth and technology has become one of the most important factors in the models of growth. The role of innovation is multiple: as motive force it directs the producers to ambitious and long-term objectives, it leads to the renewal of methods of production, supply and distribution, and management and marketing, as well as industrial structures and the appearance of new industries of economic activity, achieving a wider spectrum of products and services, as well as relative markets. Inputs affect the intermediate inputs, which consequently affect and define the productivity and competitiveness level. Technological change, innovation and technology creation and diffusion are an important factor to economic progress. While innovation may lead to divergence between producers or nations, imitation through diffusion and dissemination tends to erode differences in technological competencies, and hence lead to convergence (Fagerberg and Verspagen, 2002). On the other hand, combining the production functions in order to create and disseminate innovations leads to improvements in productivity and economic development.

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Spatial planning and tourism development – The case of Greece

Abstract:
This paper presents the evolution of spatial planning as it was implemented in Greece since the end of the 2nd World War in connexion to its influence in the shaping and growing of Greek tourist destinations.

The paper acknowledges that the spatial planning policies implemented and the spatial status that they form are proven to be crucial factors in the organizational model followed by the Greek tourist destinations.

The lack of a consistent and complete planning for the Greek tourist destinations, which would have developmental dimensions, results to the application of incoherent and, in many cases, controversial policies that affects their evolution and prospects. As a consequence, referring to specific time periods based on the philosophy on the shaping of the tourist destination proves to be a very difficult task, since tourism policies have shown over time a wide discordance between the intentions of state planning and the policies implemented at a local level through a large number of legal exceptions. Moreover, there is an obvious lack of uniformity and consistency on the policies applied by a large number of competent authorities, such as the Greek Tourism Organization (GNTO), the Ministry of Culture, The Ministry of Environment, Regional and Local Authorities.

In the long term, this inconsistency that prevails in the applied spatial and urban policies has served small properties and local interests and, consequently, the dominance of an indigenous "non-industrial" model of tourism development.

The article concludes with the examination of complicated issues that spatial planning has to deal with during this current period of economic crisis in Greece.

Key-words: Tourism development, spatial planning, planning policies, Greece

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1. The role of spatial planning in tourism development

The basic pillars of the legal framework in spatial planning on tourism are, on the one hand, legislation about land use, housing and urban planning, as well as development and investment incentives and environmental and cultural protection (Korres G. & Kokkinou C., 2014). In a context of a rationally organized and well-governed society, spatial planning positively contributes to sustainable tourism development, to attracting investments and to adding to the attractions in touristic areas, as well as to achieving the desirable tourism organization model of an area.

2. The Greek tourist destination; characteristics and particularities.

The Greek tourist destination has some special characteristics, which could be defined as "particularities", in the sense that they appear here more often in comparison to any other Mediterranean destination. They are connected to economic, social and political interrelations that have defined the organizational model and the tourist product and, therefore, they are now structural components of the Greek destination.

The particularities of the Greek example comprise, first of all, land property and its connection to the whole state strategy on spatial planning. The Greek tourist destination is characterized by recurring fragmentation of land property. Complementary to this "typical form" of the Greek tourist destination is the interference *of second homes with tourist facilities* (Saradakou E. 2010, Sarantakou E. & Tsartas P. 2015). Said fragmentation in touristic areas appears -as concluded in this study- since the first tourism development phase and is intensified during the next periods by the applied state spatial policy. Land fragmentation was a crucial factor in the Greek tourism development model and raises great difficulties to every effort for reform. Coexistence of second homes and tourism has many positive elements, such as amplifying space and time concentration, but during the current period it raises many issues of competition between the two land uses.

The second characteristic of Greek tourist destinations, linked to the above and to the tourism policy followed mainly since the 1980s, is the dominance of Small and Medium Tourist Enterprises (SMTEs) together with a "non-industrial" type of tourism in the Greek territory. This characterization concerns the organizational features (small family touristic units which are viable thanks to an atypical employment, low level of specialization, multi-profession). Tourism activity has been "industrialized" only in some areas (Rhodes, Kos, Crete, Corfu, Chalkidiki, Athens), where large tourism businesses coexist with many small/ family businesses. SMTEs show many limitations but also opportunities for a sustainable touristic prospect. They are linked to poor quality services and structural weaknesses in

development. However, they benefit the local economy and show a remarkable durability in time.

3. The evolution and the role of spatial planning in the Greek tourism development

1945-1967. The state intervenes through spatial planning to promote Greece's inclusion in the international touristic market

In the time period after the Second World War, the State implements an intervention policy in order to establish the foundations for a tourism development in a economically destroyed country. The Greek National Tourism Organization (GNTO), since its foundation2 , assumed a role of development, coordination and mainly of intervention in the organization and promotion of Tourism in Greece.

The GNTO was the only body which could implement spatial and land use policies in Tourism, as shown by the following competencies:

3. Nationalization of land and resources (beaches, spa areas, areas showing touristic dynamics), which were transferred to the GNTO in order to be included in the wider strategy of the country's tourism development. In this context, the GNTO could lease public land for touristic purposes, for a time period of 40 years and concede it to individuals.

4. The characterization[3] of a number of cities, towns, villages with landscapes of unique beauty and notable archaeological, historical and folklore elements into “touristic places”. The aim was to control and supervise them, through spatial planning interventions, so as to ensure the adequate conditions for the attraction and service of inbound international tourists.

- The exclusive competence of siting touristic activities in different areas which could develop Tourism, as well as the inspection of housing and urban development of such areas.
- Supervision via the “Tourist Police” of the good “appearance” of touristic areas

In a period when Greek Tourism was starting and then developing, spatial policies added to the increase of value in areas defined as”Touristic Places” and created expectations for prospects in Tourism. State interventions succeeded in including the country in the touristic map and, at the same time, set the foundations for an enriched tourist product. This favorable framework established a “up-to-bottom” development and also activated private initiatives. In the period 1945-1967 hotels increased by 66.5%, while class A and class AA' units increased by 73.2%.

2 L 1624/1951 article 2 par. 1

3 L 180/1946 on touristic places (GG Series A, Issue No. 324/1946)

4. 1967-1975. Spatial planning in the service of attracting private tourism investment

Legislation in the next period – its high point being the period of the abrogation of Democracy in 1967-1973– considered tourism development to be *the ultimate public interest for the national economy*. A rather favorable regulatory framework was voted to help tourism, offering economic and spatial incentives, which favored the creation of large high class hotel businesses (Saradakou 2010). During this time period, several legal provisions were completed and applied, which gave spatial and urban planning benefits to tourism facilities, such as favorable places to exploit (e.g. on the shore4, next to archaeological sites etc.), the expropriation of public and private lands to establish and to expand hotels5 and building by way of derogation with favorable terms in the touristic plot exploitation6.

Such state policies, in combination with the rapid increasing of incoming tourists, was very beneficial for Greek hotels. The number of hotel beds increased rapidly (53,034 in 1961 to 184,016 in 1975) and, also, the average size of Greek hotels was now larger (33 beds in 1961 to 73 in 1975). However, in some cases large hotels were proven to be non-viable, due to lack of infrastructure in the area which led to limited demand (Center of Planning and Economic Research - KEPE 1997: 12), and in many others, unregulated constructions and lack of aesthetics appeared (Belavilas 2005:45-47). The exaggerations and misappropriations that occurred in order to serve private tourism investment led to a spatial planning framework, formed during the next time period, which was very "cautious" towards tourism development.

5. 1975-1990. Spatial policies to enhance the creation of a small-medium size hotel model.

The Constitution of 1975 enshrined spatial planning for the first time in Greece and the first law on "spatial planning and environment" (L 360/76) was voted within the next year. In the beginning of 1980s, attention was given to urban planning. The Urban Restructuring Operation (EPA) was announced; urban and housing development was regulated (L 1337/83), and Urban Control Zones were defined.

However, the regulated spatial planning framework was never in fact implemented since -as it was proven- there was no political will to activate it. In the process of spatial designing, local government authorities (Prefectures) were given important urban planning competencies, such as expanding or zoning residential areas. Many spatial planning studies in touristic areas stopped or were left pending for many years by decisions of the state or local

4 Emergency Law 522/1968 (GG Series A, Issue No. 196), L 439/1970

5 L 2176/52 was extended (as amended with L 3213/1955) to provide for the appropriation of plots in order to establish or expand hotels.

6 For example, the RD 18/3/1967, GG Series D Issue No 39/23-3-67, RD 11/1/1967, 395/68, GG Series A, Issue No 95, RD 465/25.6.70, GG Series A, Issue No 150 and P.D. 1199/1972

authorities and zoning was done by decision of the Prefect, which was considered to be the quickest and easiest solution. As it was later discovered, local authorities did not have the means to tackle the procedures, which resulted to urban and architectural corruption of some notable residential areas (Saradakou, 2010), as well as to a network of clientele between land owners and local authorities*7*.

Consequently, during this period of tourism booming (1975 – 1990), a rather serious transformation of the Greek tourist destination was done without any wider spatial and urban planning. Small tourist units were not included in the framework for spatial planning. However, small units are the majority in Greek touristic areas and, therefore, all together represent a large number of units in the country (Ikonomou, 2000). A series of usual practices, such as the building integrity of small plots by way of derogation, the escalation of building coefficient according to the use of the construction (house, hotel etc.), private town planning, cooperative building, as well as tolerance and legalization of illegal buildings, at the long term benefited small properties and led to the dominance of an indigenous non-industrial model of tourism organization.

The time period under examination is also influenced by parallel developmental and regulatory policies. L 1262/82 expressed the different viewpoint of the newly elected government in 1981 for the *decentralization and enhancing of a "bottom-up" development* (Kouzelis, 2000:66). Specifically in Tourism, we could argue that, contrary to the model followed in the previous period, a model based on small- medium size hotels was promoted and enhanced, while large hotel enterprises were not encouraged at all. This developmental orientation served and reinforced the fragmentation of land, already emerging since the 1970s, especially in areas where Tourism had already developed.

In the middle of 1980s, a rather aggressive regulatory effort was followed for spatial planning on Tourism, which resulted to uneven medium term results. The regulation on "congested areas"8, which obstructed the appearance of new enterprises, remained unfinished since it was not completed with the regulation on destination upgrading. In combination to the rest of state policies and the general trend in the 1980s-1990s, illegal accommodation was enhanced and increased.

In conclusion, the general strategy followed between 1975-1990 for Tourism decentralization and SMTEs reinforcement expanded the professional basis of the sector by creating numerous small businessmen. This had unquestionably a very positive effect on local

7 As it was concluded by the Council of State, by Decisions No 80-81/2001, 552/2000, 1492/2000, 2317-8/1999 etc.

8 GG Series Issue No 427/86, 797/86 and 550/B/91

economies, but it also created a whole "generation" of low quality accommodation. Thus, in a period of high touristic demand in the 1980s, limitations in establishing large hotels along with the State's inability to provide resources to infrastructure led the market forces towards illegal hotels and decreased the competition in Tourism.

6. 1990-2010: Delays in implementing the regulated spatial planning; inconsistent and controversial policies implemented by a large number of competent bodies.

In the 1990s, the whole legal framework on spatial planning was renewed. Based on the new framework, the administration assigned a large number of spatial planning studies, giving priority to the touristic areas that experienced pressure for urban development. However, creating multiple parallel levels and tools of planning, which often overlapped, rendered spatial planning a chaos and delayed very much the completion process of spatial and urban designs.

Specifically, the competent Ministry of Town Planning, Development and Environment assigned "Special Spatial Planning Studies" for the islands and coastal areas, as well as studies on the urban development of areas for second homes9. In 1997 a new law was voted on "Sustainable Urban Development" (L 2508/97), establishing two levels of urban planning. Under the pressure of the Council of State (Ikonomou 2000, 2008), the state's interest in "spatial planning" is renewed and in 1999 a new law is established on "spatial planning and sustainable development" (L 2742/99). On the basis of the new regulatory framework and for the first time, spatial plans are designed and approved at a state level since 2005, which provide general guidelines for spatial planning and organization of the country (General Framework on Spatial Planning and Sustainable Development), as well as special guidance is provided in specific sectors of productive and business activity that are important for the country. Following the Spatial Planning Framework for Tourism, which was approved in 200910, the Greek territory is divided in categories according to the criteria of a) density and type of tourism development, b) geomorphologic characteristics and c) sensitivity. Each category is provided with specific guidelines on the type and class of tourism infrastructure to be established and, generally, on the organization of tourism development to be followed.

A common feature of all the above laws and their accompanying regulations (Presidential Decrees, circulars, etc.) is the provided expectation to organize space at all levels. Unfortunately, such legal regulations had little effect, mainly due to the non implementation of laws, to the selective application of planning, to the refusal to turn proposals and studies into regulations and to the announcement of far-reaching programs that

9 Applying, thus, the new framework on urban planning for second homes (L 2242/94)
10 GG Series B, Issue No. 1138/2009

the state cannot implement, as well as to the lack of true cooperation between the interested parties. Long term delays in completing the announced studies strengthened -as expected- the pressures for housing and for the urbanization of coastal and resort areas.

Nevertheless, even if the officially regulated spatial planning was never applied, another parallel system emerged since the middle of the 1980s, which is implemented without being regulated and which derives from the European Union Structural Funds' regulations.

In the time period between 2000-2010 Tourism is once again considered the *invariable factor in the economic development*, while the development strategy is closely linked to the Community Support Frameworks (CSFs) and to the EU initiatives. The implemented policies try to balance between the identified necessity to upgrade the touristic offer -linked to the desire to attract tourists with higher income and to the guidelines of the European Union on environmental protection- and the fear of the political cost provoked by such a shift.

7. Conclusions on the consequences of the applied land planning in the shaping of the Greek tourist destination

In the case of Greece, unregulated, inconsistent and unplanned spatial development is more obvious in touristic areas left out of urban and spatial planning for a long time and it appears mainly in suburban, in periurban or coastal areas and in settlements of less than 2,000 inhabitants. Strong incentives given in tourism, especially in non urban areas, added to the extra value of land property and contributed to the phenomenon of urbanization of periurban, roadside and coastal areas. Urban Control Zones or other planning tools that were promoted up until now, were applied only for 6% of the Greek suburban space (Ikonomou 2000). Any other policy trying to impose specific land uses or the protection of agricultural lands and the environment was applied only to specific places (such as forests, archeaological sites). On the other hand, a number of provisions on building integrity of small plots by way of derogation, the escalation of building according to the use, limitation of settlements of less than 2,000 inhabitants, urban planning of second homes, private town planning and cooperative building legalized, to a great extend, the exiting situation of second homes and of periurban, roadside and coastal degradation.

Inconsistency in land and urban planning shows that the chosen policies serve as a framework to promote the aims and goals of various social groups; such aims are later adopted as state policies. These “conveniences” - apart from the intensive exploitation of private ownership which concerned a wide working class - served the development of many sectors of the Greek economy, since constructions and tourism were considered the

"locomotive" of the economic development (Ikonomou 2000:13). As a result, there is a dominance of small and very small tourist units. The average size of the total accommodation capacity (any type of accommodation) in Greece is only 31 beds, while in Turkey it is 200 beds, in Portugal 138, in Cyprus 102 beds and in Italy 4711. The average size of hotel capacity in Greece is also small (76 beds/40 rooms). It is notable that more than 50% of tourist beds in Greece belong to small units with up to 50 beds, while units of more than 400 beds represent only 10.7% of the total beds.[12].

At the same time the state tolerated, even pardoned several forms of illegality (e.g. illegal construction) and bad entrepreneurship, while, on the other hand, it was suspicious with legal entrepreneurship and legal constructions creating, thus, great obstacles in siting of investment projects, and especially large scale investments (Giannakourou, 2010).

8. 2010-2016 (current time period): The new spatial planning framework on Tourism as formed during the economic crisis

During the period between 2010-2014, there was exponential activity in legislating[13], which created a new framework for initiating tourism investments that has specific objectives: to introduce new products that emphasize tourism real estate, to attract large tourism investments that the country clearly lacks and to limit land dispersion. The aforementioned policy was connected to a number of investment propositions coming from Greek banks and representatives of Tourism and Industry. Moreover, it was directly or indirectly supported by the "Memorandum of Understanding" (MoU) between Greece and its lenders. The policies implemented are consistent to their objectives and try to attract large tourism investments, as well as to promote the creation of tourist products and facilities that the touristic offer of the country lacked so far, by making a priority the development of the "tourist residence" (Sarantakou E. & Tsartas P., 2015).

The new model is legally supported by special procedures for siting and licensing investment plans, which aim to surpass malfunctions, delays and rigidities of the Greek spatial and urban planning, by proposing new, integrated and dynamic models of spatial planning and fast track licensing (Giannakourou, Kafkalas):

- It creates a special licensing mechanism for large scale tourism investments - "strategic investments" 14,

11 Research Institute for Tourism 2008
12 National Bank of Greece 2014
13 As for investments, 26 laws and acts of legislation were voted and a large number of Presidential Decrees, Joint Ministerial Decisions and Ministerial Decisions were issued in the period 2010-2014
14 L 3894/2010

- Spatial planning tools are established by special town and spatial planning laws in order to create large tourist investments (*Special Plans for Spatial Development of Public Properties* (*ESCHADA*)15 and *Special Plans for Spatial Development for Strategic Investments in Private Real Estates (ESCHASE*16),
- At the same time a Spatial Planning Framework on Tourism17 is amended in order to facilitate large scale organized facilities.
- A new regulatory framework on spatial planning is created on the basis of the law on "Spatial and urban planning reform – Sustainable Development"18, aiming, among other things, to reduce the time needed to approve spatial and urban plans, and to define and to avoid conflicts and overlapping of different levels of planning

9. Current issues of Tourism spatial planning in Greece

As Wassenhoven (2011) argues, spatial planning is currently subject to three trends and conditions that generally form the policies of tourism development across Europe and specifically in Greece.

(A). *The pressure of the economic crisis which leads to the effort to attract investment and to reduce state expenditure.* Such trend, which has taken international and specifically European dimensions, is rather dramatic in our country. Spatial planning focuses on helping the different areas in strengthening their resistance and on promoting their economic recovery, so that towns and regions can resist the pressure and take advantage of the opportunities emerging from the crisis. (Bristow, 2010). In this context, spatial planning in Greece shifted towards supporting development and investment in the period 2010-2016; this shift assumes the characteristics of a new "model" of spatial planning regulation, which is mainly dictated by a setback of the state's role and the emerging of the market's role, especially in times of crisis (Giannakourou G & Kafkalas G. 2014, Clabatsea E. 2012)

(B). *Spatial injustice which invalidates spatial planning and undermines sustainable tourism development.* Injustice concerns many Mediterranean countries, but in the case of Greece illegal spatial planning has become a structural characteristic. Currently, a series of laws19 perpetuate the ongoing "stretching of the red line" in legalizing illegal buildings of any use (Saradakou, Tsartas 2015). On the basis of the relevant regulations, more than

15 L 3986/2011
16 L 4146/2013
17 GG Series B, Issue No. 3155/2013
18 L 4269 /2014
19 such as L 4014/11 & L 4178/13, L 4315/2014

900,000 illegal buildings20 have been legalized in the period 2011-2015, 62% of them being in touristic areas.

(C). *A consensual approach of spatial management,* basically promoted by the E.U., with the state being one of many parties and the public, social and private sector partnerships, together with the participation of citizens being the selected path. This approach, though, raises questions about the risk of conflicts that rise through such participatory processes and that might lead to their total weakness to make decisions and to assume responsibilities. In Greece, there is no consensual mindset on spatial planning21, while steady structures for the information and the dialogue of the participants is an issue that also needs to be solved.

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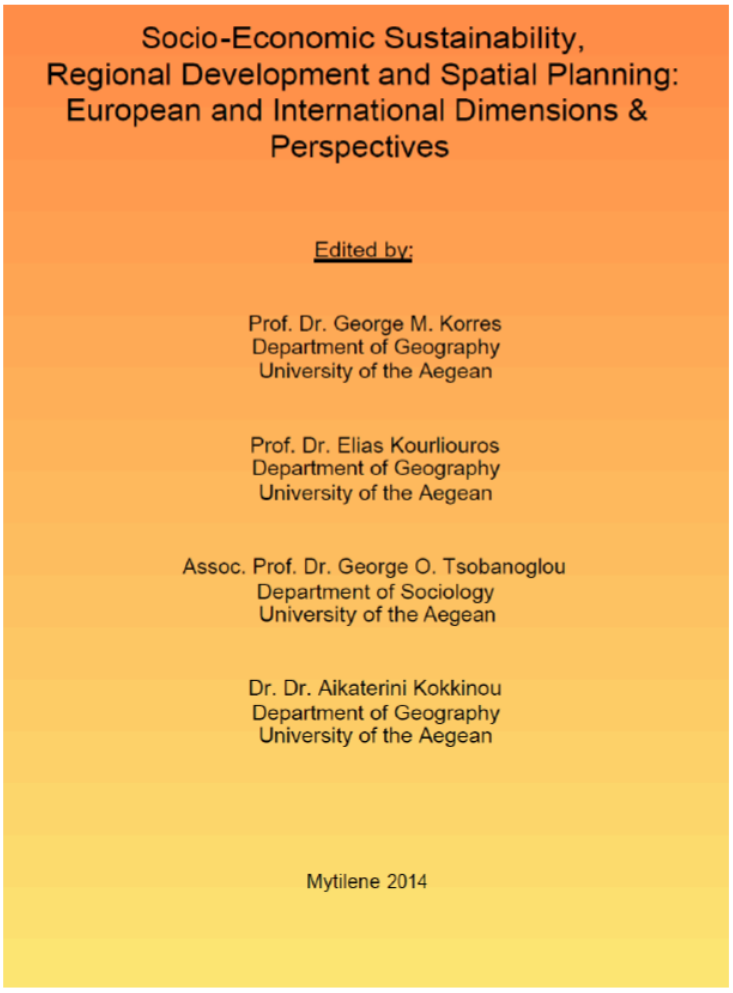

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